FTSE Russell
An LSEG Business

Asset Allocation Insights

QUARTERLY REPORT: **JUNE 2023** FOR PROFESSIONAL INVESTORS ONLY

Disinflation, stable 7-10 year sovereign yields, stronger-than-expected economic growth & AI euphoria lead to risk-on rally, but downside risk remains

Progress on inflation control and central bank rate paths diverge across countries, leading to dispersion in investment opportunities. The risk/return profile of different asset classes and their correlations are changing, opening new opportunities (and risks) for asset allocators and increasing the need for selectivity.

Highlights

Contradictions and a mixed picture

Slowing inflation and stable 10-year US Treasury rates are supporting risky assets. Economic growth remains stronger than expected and euphoria grows over an AI-led new growth cycle. IMF GDP forecast upgrades have improved equity earnings growth forecasts and revisions, and risk assets have performed strongly YTD. Risk factors include contracting US manufacturing PMI, sub-par growth in China, tightening US bank lending, worsening upgrade/downgrade ratio in high yield, falling copper & oil prices, inverted yield curves and lagged effects of monetary tightening; contractions create the potential for near term volatility.

Stay short or long duration? Fixed income, particularly investment-grade credit gains appeal

With the potential peak in 7-10 year rates, duration risk may be more muted going forward. Inverted yield curves argue for staying short duration, but reinvestment risk points to taking advantage of current high LT yields. Slowing growth and tightening liquidity may increase high-yield credit risk. With yields north of 5% and volatility less than half that of equities, investment-grade corporates look attractive on a risk-adjusted basis. Stock/bond correlations have started decreasing as inflation slows, and diversification benefits could comeback soon. Fixed income has earnings yield matching & income yield higher than infrastructure.

Big changes in equity leadership

The stabilization in 10-year US Treasury rate since early 2023, dollar weakening since October 2022 and AI innovations have led to a strong comeback in equities, particularly Growth, Technology and (Tech-heavy) US equities. However, US markets are richly valued compared to the rest of the world. Developed Europe did very well in the last 12 months, buoyed by diversified industry weights and a high dividend yield. Balance sheet strengths and access to credit have led to a strong comeback by large caps since the banking crisis. High industry return dispersion improves the opportunity set for industry allocators.

Infrastructure and commodities for diversification

Listed infrastructure has outperformed real estate over the last year. Real estate is facing structural changes, leading to significant dispersion within the real estate sector; data centers doing the best and office sector the worst. With low correlations to other asset classes, commodities could provide diversification.

Chart 1: Stabilizing inflation, declining rate differentials and a weaker dollar have helped a risk-on rally since October 2022.

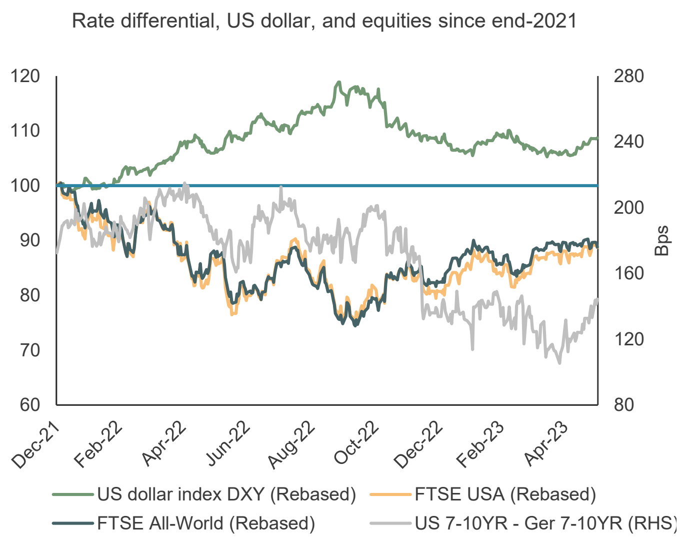
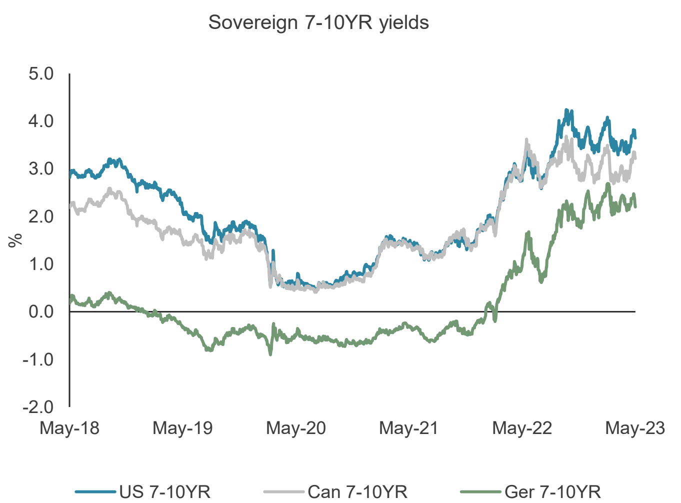


Chart 2: Stable sovereign 7-10 year yields (notably US yields, the world's risk-free rate) have underpinned the YTD risk rally.



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Financial Markets Overview

Inflation has decelerated in both the US and Eurozone (though more so in the US). Higher inflation in Japan is positive as the country pulls out of deflation, following a decade of structural reforms. Inflation in China is low and falling. Overall, **inflation concerns are waning, with most countries getting closer to the end of monetary tightening. The current dispersion in inflation and rate path across countries is creating a need for selectivity in investment opportunities.** More stable inflation breakevens and term premium in sovereign bonds, falling commodity prices and normalized supply chains have led to some **stabilization in the 10-year US Treasury yield and other sovereign long yields, providing a tailwind for risk assets.**

The consumer-led US economy remains strong, with growing optimism over the potential for an AI-led productivity boom and upgraded economic forecasts from the IMF and US Federal Reserve. **Corporate earnings estimates and revisions have turned positive in most markets** and led to significant valuation re-ratings in equities. However, the inverted yield curves in major economies, sub-par growth in China, and potential lagged effects of the existing monetary tightening lead to **continuing recession risks**. **Equity valuation expansion may have moved ahead of growth, increasing the probability of a short-term correction.**

Rate stabilization, and still tight credit spreads (despite some widening post the March banking crisis), led to most investment-grade (IG) and high-yield (HY) markets having positive returns YTD. However, the **deteriorating credit rating mix of the US HY index and significant tightening of bank lending increase HY risk, arguing for a bias toward IG**, despite their duration being longer than HY. **While flat to inverted yield curves argue against lengthening duration, reinvestment risk argues for investors locking in current high yields. Valuation** (percentile of option-adjusted spreads over time) **and risk-return profile** (return per unit of duration risk) are **superior for Eurobonds compared to those in the US.**

US equities are dependent on technology and have low dividend yields. Developed Europe has more industry diversification and higher dividend yields (positives in stressed markets & reasons for the high returns in the last year). More stable rates and optimism in AI-fueled growth have benefited long duration technology, which in turn has underpinned the recovery in US equities and Growth retaking the lead over Value. Investors should note that US markets are richly priced, while Japan and UK are relatively inexpensive.

Cross asset comparisons make fixed income attractive. Yields north of 5% and volatility less than half that of equities make World IG bonds interesting for investors. Earnings yields for fixed income is almost equal to that offered on infrastructure. HY has provided higher volatility-adjusted returns than IG corporates over the last 12 months and three years, though current downside risks argue for going up in credit quality.

Funds flows into money markets and fixed income continue to show investor caution. Flows into equities have strengthened recently. The last year saw outflows from US equities towards Developed European and Japanese equities. EM bonds has seen outflows too.

The US dollar has eased significantly since hitting a multi-decade high in October 2022 (despite a slight strengthening post banking crisis). **Tightening rate and growth differentials could further weaken the US dollar, easing financial conditions and providing support to large cap US equities** (almost 40% international exposure and benefit from a weaker dollar).

The banking crisis highlighted the importance of strong balance sheets and credit access, leading to large caps decisively outperforming small caps. DM finally getting inflation under control has led to a resumption of the long running trend of DM equities outperforming EM equities. Correlation between EM and DM equities continue to fall as the US-China polarization continues.

Listed real estate underperformed equities last year, most acutely in countries with the highest inflation. Real estate underperformed infrastructure, and (not surprisingly) the office sector underperformed the most. Infrastructure in EM performed best.

US equities are more correlated to global than domestic bond yields (largest economy & reserve currency). HY is highly correlated to equities, and stock/bond diversification comes from IG bonds. Commodities have provided diversification benefits, even in low-return periods. Falling inflation and slowing pace of rate hikes have led stock-bond correlations to finally roll over after hitting record highs. This trend might soon bring back the benefits of the 60/40 portfolio.

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Macroeconomic Backdrop

Where is the recession? Conflicting signs in the global economy.

Coordinated central bank tightening in the last 12 months is having an impact on leading indicators. US manufacturing has contracted (Chart 1), a trend also seen in many large economies, and inflation expectations are declining globally (Chart 3). Normalized global supply chains (Chart 5) and lower commodity prices have alleviated some inflationary pressure, while a slowing US housing market and lower Chinese producer prices are expected to contribute to further decreases.

The IMF recently upgraded its 2023 GDP growth forecasts, with most countries expected to avoid a recession in 2023 (Chart 2). Manufacturing weakness is being offset by strength in services, which may point to a structural spending change post-Covid. Easing financial conditions is also helping (Chart 4). However, the impact of monetary tightening has long and variable lags, and indicates downside risks that could change the expected soft landing to a recession.

Chart 1: Forward-looking indicators show manufacturing is contracting, though the rate of decline has slowed.

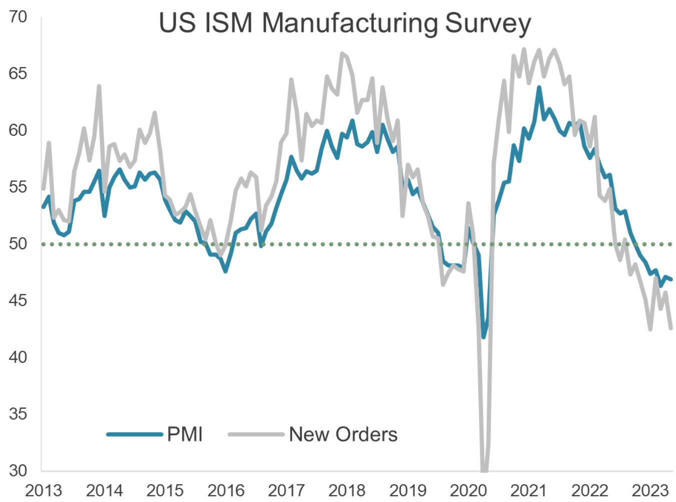

Chart 2: The IMF revised higher the 2023 growth estimates in key markets, with most countries expected to avoid recession.

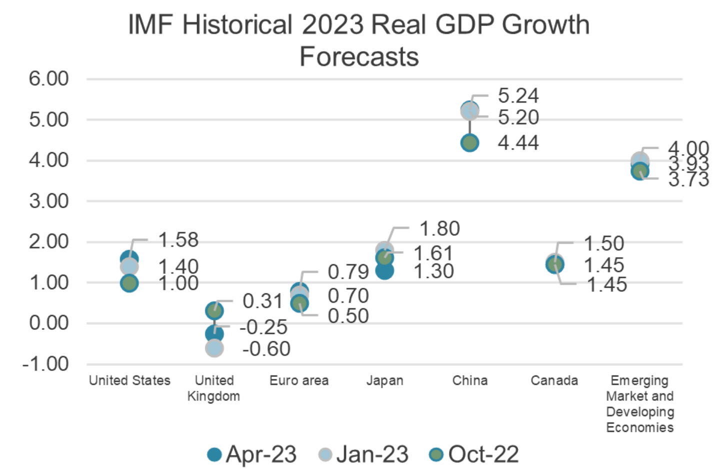

Chart 3: Global inflation is expected to drop sharply to pre-Covid levels by 2025, but with wide inter-country dispersion.

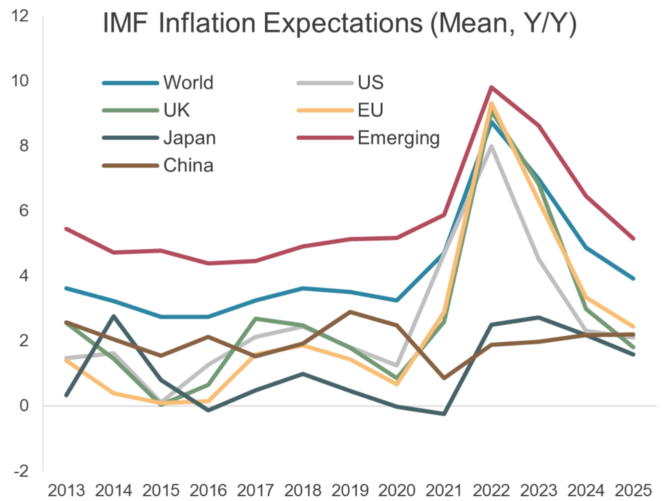

Chart 4: US financial conditions are still tighter than pre-Covid levels, despite some slowing of QT since the banking crisis.

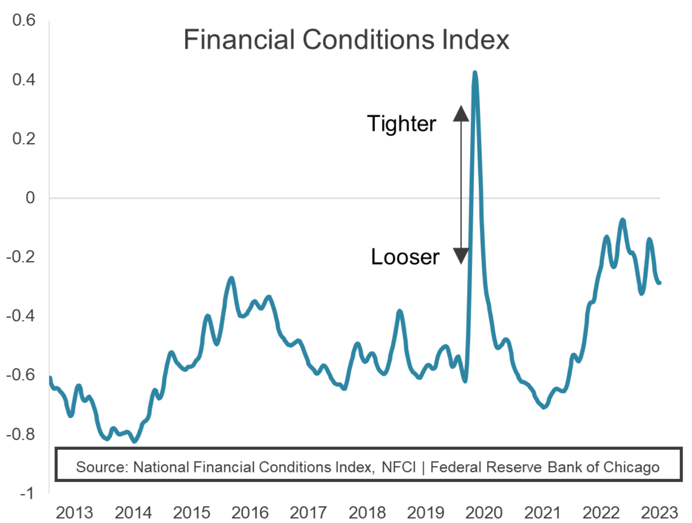

Chart 5: Global supply chain pressures (a key driver of inflation spike in 2022) have normalized and are at a 10 year low.

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Macroeconomic Backdrop

Macro indicators point to 'below potential' but positive economic growth, with room for sovereign rates to ease. Together this suggests a high probability for a soft landing or mild recession. Equity markets, however, are pricing more benign economic conditions than credit. Could this be because equites are very long duration assets and are pricing in structural and longer run growth potential from an AI-led new productivity growth cycle, and looking through short term risks?

Gold tends to be a risk-off commodity, while copper is a proxy for global growth. The Copper/Gold ratio indicates global growth is slowing, but the slowdown or recession will be milder than during the 2015-16 China growth scare and the early-2020 Covid crash. Chart 2 also illustrates the long-term positive correlation between shifts in Copper/Gold (economic growth indicator) and sovereign bond yields, and shows the recent disconnect with yields running higher than their typical relationship to growth prospects would imply. Oil prices are reconfirming the economic slowdown but they are not as low as in 2016 (Chart 3). Charts 2 & 3 imply that sovereign yields have more room to fall, which could in turn provide a more positive backdrop for risk assets.

Chart 4 shows the typically strong correlation between risk in equities (volatility in small cap, the riskiest part of equities) and US high yield credit (credit spreads). However, while credit spreads widened following the banking crisis, equity volatility continues to fall. Equity markets are priced for more benign economic conditions than credit. Or being a long duration assets, equity investors are looking through short term recession risks, towards the possibility of an AI and innovation-led next phase of economic growth.

Chart 1: Historic relationship between PMI & GDP growth points toward ~1-2% consensus in next 12M, but services are stronger.

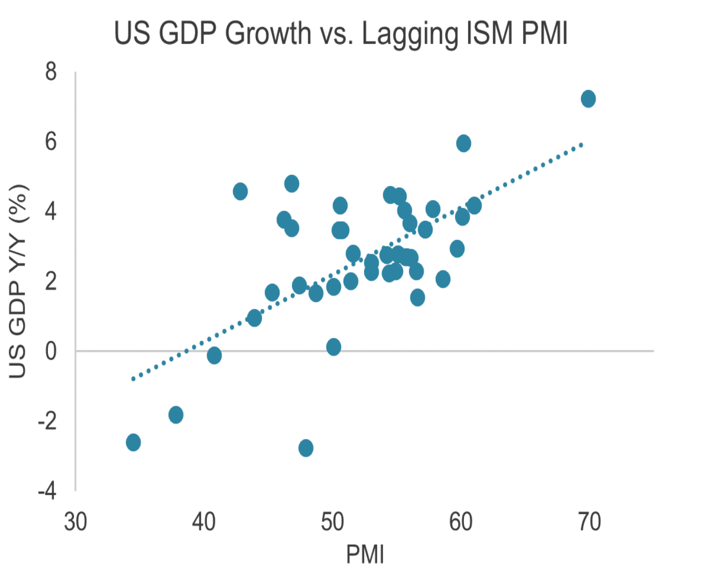


Chart 2: The disconnect between Gold/Copper ratio and sovereign yields indicate yields have scope to fall further.

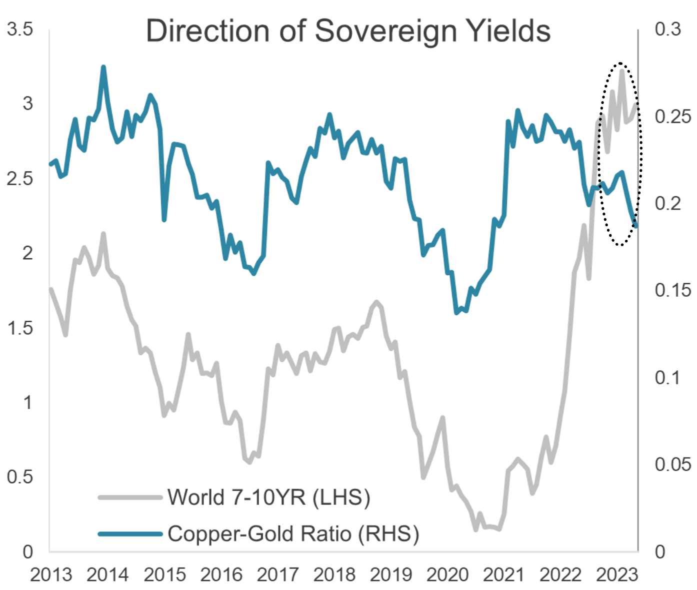


Chart 3: Falling oil prices indicate US sovereign yields may have more room to fall.

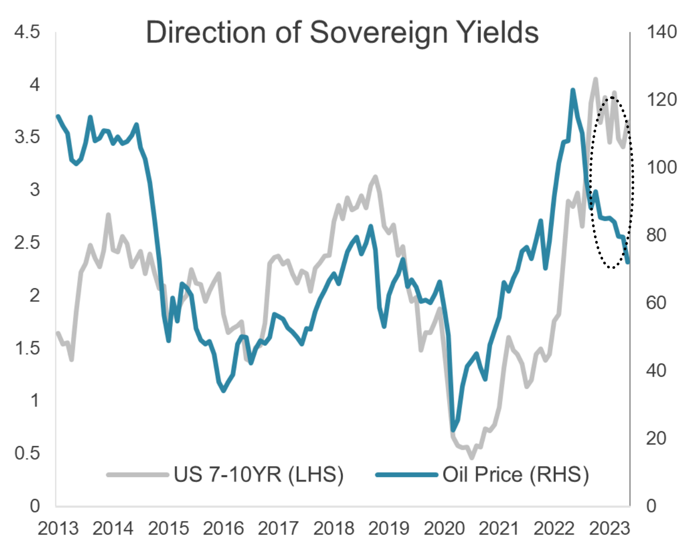
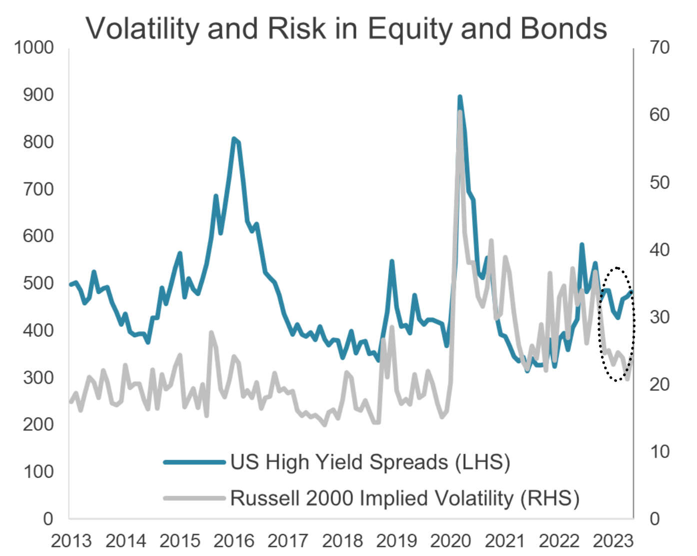


Chart 4: Equity risk (volatility) has fallen more than HY risk (spreads), and kept falling after the banking crisis, unlike HY.



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Sovereign Yield Curves

Despite broadly resilient economic data and the resulting signaling of 'higher for longer' policy rates from DM central banks, markets are pricing in inflation mean-reverting to pre-Covid levels and futures data point to policy rate peaking this year. Stabilizing term premium confirms a peak in long end yields.

Inflation expectations are falling across all tenors, more so at the short end, leading to falling US nominal yields (Chart 2). Most countries have experienced similar drops in long nominal yields (Chart 3), mainly due to falling inflation expectations. The Fed recently paused, leaving the option for more rate hikes, but falling inflation may make that unnecessary (Chart 4). Futures market-implied expectations show a peak of around 5.5%. This **suggests the 10-year US Treasury yield (and other key sovereign long yields) has peaked, which, if so, should support risk assets. It also indicates that the worst of duration risk may be over, and while a flat to inverted curve calls for staying at the short end, reinvestment risk argues for locking into longer rates.**

Key portions of the US and most G7 countries' yield curves (YC) have been significantly inverted since last summer and the historical accuracy of YC inversions in predicting a recession 12-18 months later is well known. **Most economies remain fairly strong and the easy liquidity during the GFC-post Covid period may have diluted the YC signal, but the risk of a recession remains.**

Chart 1: The US and German yield curves are deeply inverted, a signal that usually portends slowing growth and recession.

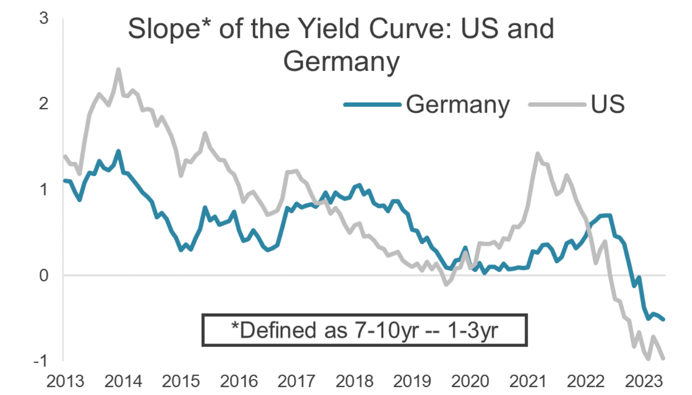


Chart 2: Lower US nominal yields in the last 3M is due to falling inflation expectations. Real yields have risen at the short end.

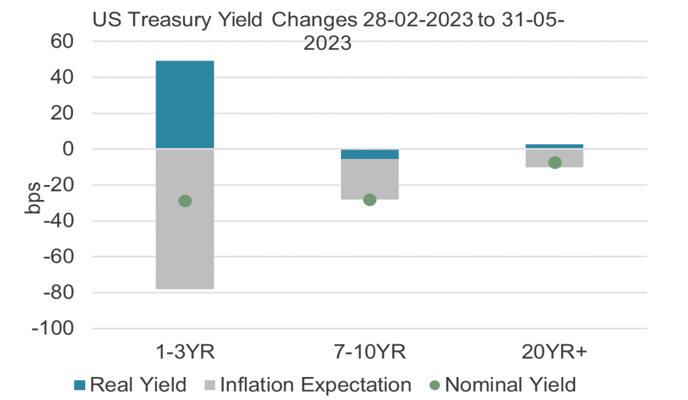


Chart 3: Long yields in most countries (ex UK) have fallen in the last 3M. This is driven mainly by lower inflation (ex in Japan).

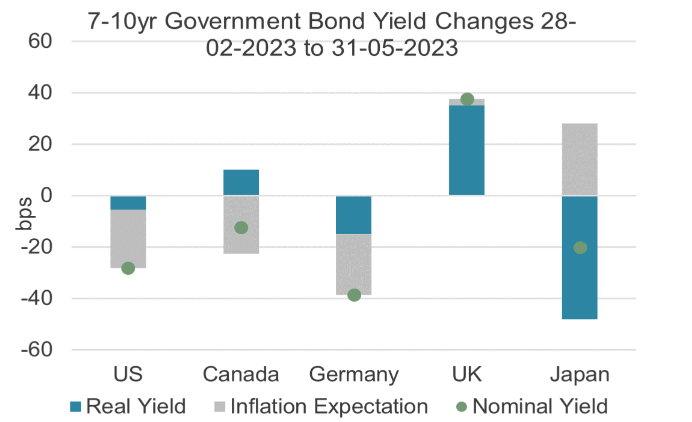


Chart 4: The Fed Dot Plot indicates policy rates are expected to peak in late 2023 (14 June).

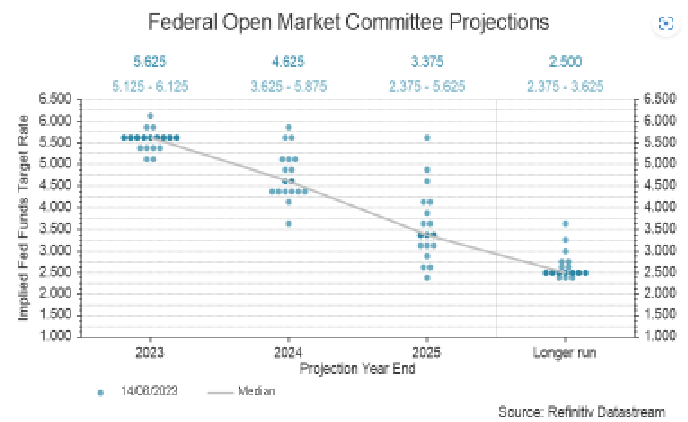


Chart 5: The US 10-year term premium appears to have plateaued, a key sign that long rates may be near a peak.

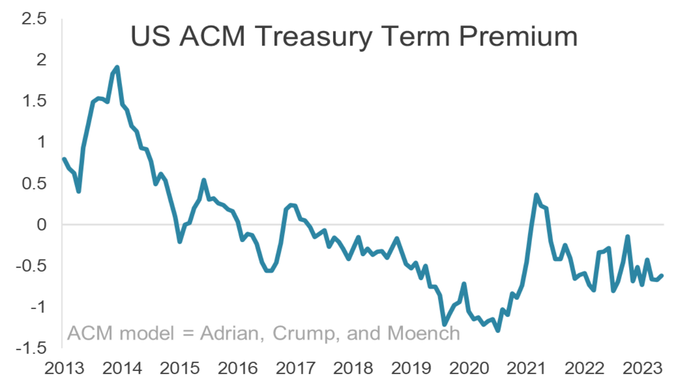
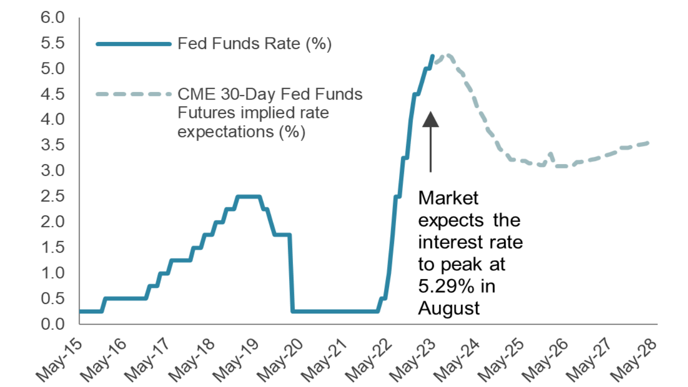


Chart 6: CME futures are pricing in expectations for US policy rates to peak at under 5.5% in 2H 2023.



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Credit

Credit spreads widened slightly during the banking crisis but have since reversed and remain lower than in Q4 2022.

The credit spread widening post the US banking crisis in March was most pronounced in the riskiest markets, i.e., EM HY. However, spreads have reversed since and returned to close to their earlier levels. Within IG, EM credit spreads are marginally higher than Euro spreads by about 6bps at the end of May.

This lack of stress in credit markets is reflected in the current data from the NY Fed's Corporate Bond Market Distress (time-series measure of bond marketing functioning), which remains in the lowest quartile, based on 10 years history and close to average, based on data since 2005. This indicates that credit markets are not stressed. It also indicates that credit markets are pricing in fairly benign business conditions.

The broad stabilization in sovereign rates have also countered the credit spread widening, leading to most credit markets posting gains in the last three months and YTD, with the exception of EM HY.

Chart 1: Credit spreads, despite slight widening during banking crisis, remain lower than in 4Q 22. Pricing benign conditions?

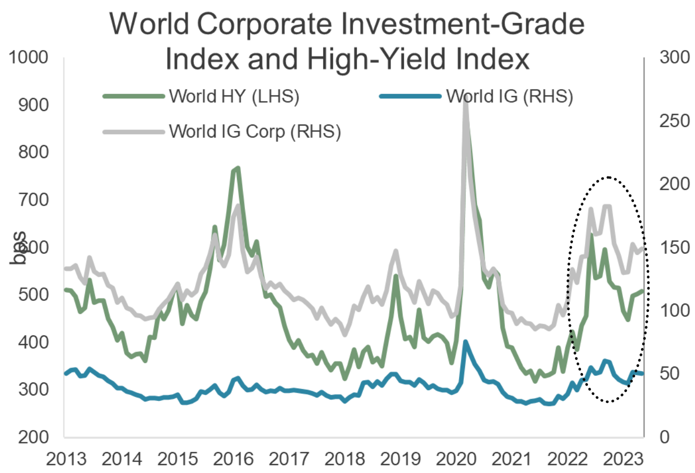


Chart 2: In both IG and HY, spreads have widened post banking crisis in March, but most notably so in EM HY.

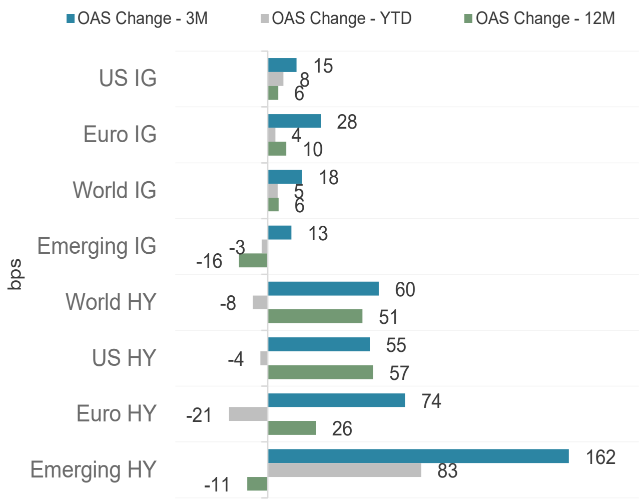


Chart 3: Over the last 3M & YTD, stabilization of sovereign rates balanced the spread widening, with only EM HY posting losses.

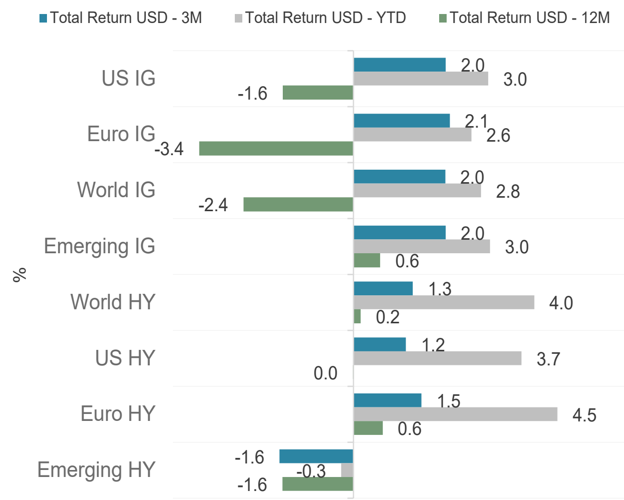


Chart 4: IG corporate spreads widened slightly during the banking crisis in Q1, but have tightened since and remain lower than in Q4.

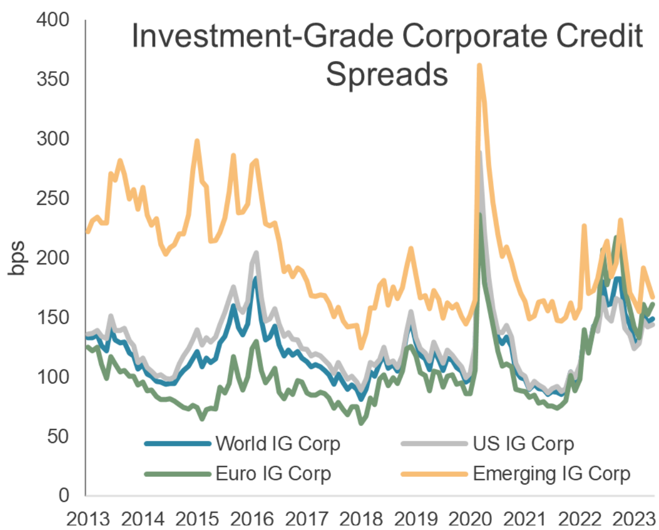
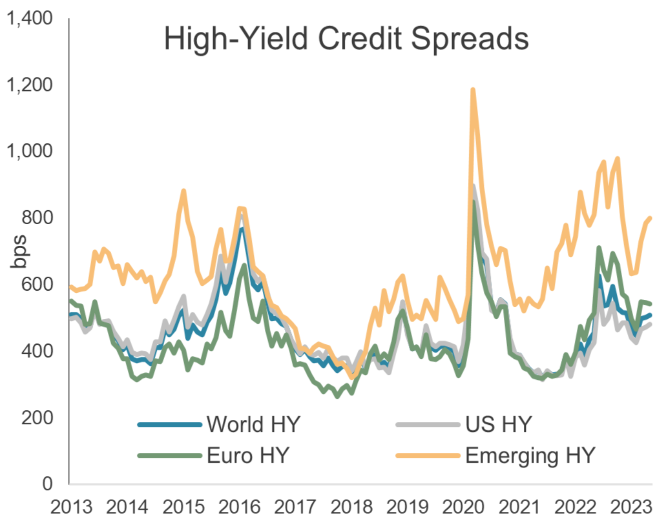


Chart 5: Within HY, EM spreads have widened the most since March but still remain lower than in Q4 2022.



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Credit (Continued)

Credit is pricing in benign macro conditions despite risks. Euro bonds have attractive valuations & risk-reward profile.

After reaching extreme stress levels in 4Q 22 (almost two standard deviations above the 10-year mean), global IG spreads have tightened significantly (now at one standard deviation). HY credit spreads remain far below what the significant tightening in bank lending standards would imply (Chart 5). Important risk for investors arises from the deteriorating credit composition of the market: the credit quality has clearly deteriorated in the HY index (Chart 1), while in IG, the lowest credit quality (BBB) makes up 54% of the index, up from 40% in 2013. The upgrade-downgrade ratio is showing a slight deterioration (Chart 4). Default risk (CDS implied probability), while rising, remains low due to the ample cash on corporate balance sheets.

In terms of valuation within different parts of credit markets (Chart 2): Within IG, bonds in Euro are more attractively valued than in US, while EM is very richly priced. Within HY, Euro bonds are cheaper than in the US and marginally more expensive than in EM. Given the higher credit risk in EM, this implies Euro bonds are attractive from a price-risk level. HY Duration-risk-adjusted yields are higher for Euro & EM bonds than for US (Chart 3), which given credit risk implies that Euro bonds currently offer higher risk-adjusted returns than their US and EM equivalents.

Chart 1:The credit profile of the US High Yield Index has improved since 2013, but recently has deteriorated significantly.

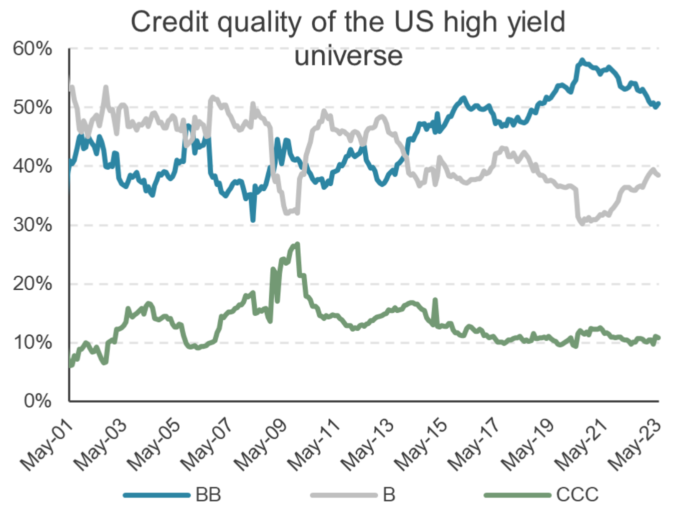


Chart 2: In IG, Euro IG has the most attractive valuation, while EM is richly priced. In HY, EM is attractively priced, followed by Euro.

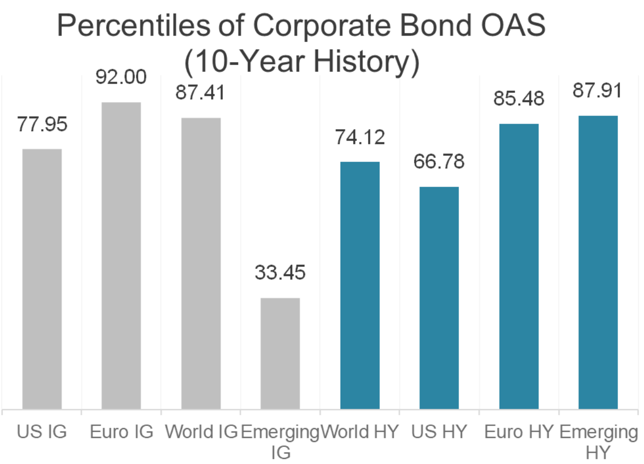


Chart 3: Return per unit of duration risk is highest in emerging markets (for both IG & HY) and higher in Europe than the US.

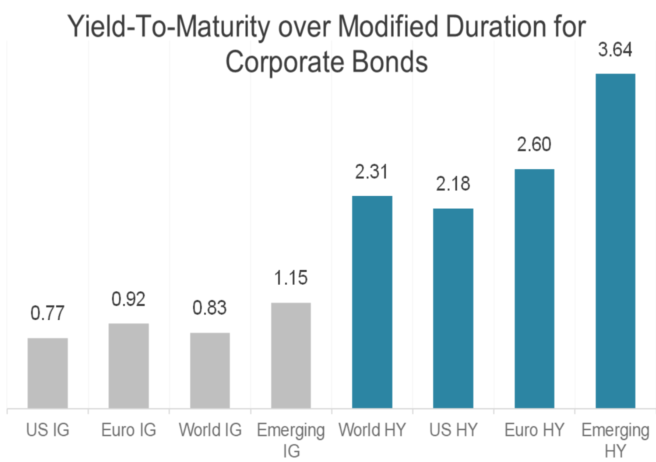


Chart 4: Upgrade-downgrade ratio has deteriorated recently, but remains better than in late 2022.

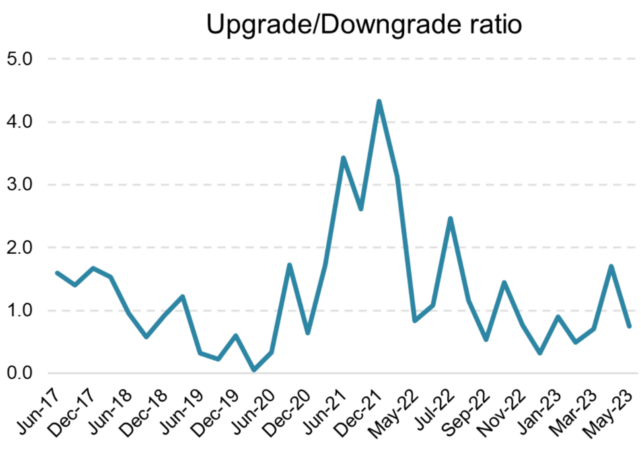
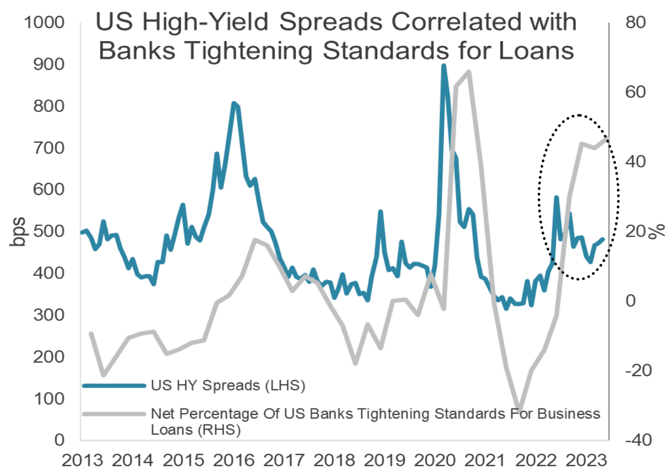


Chart 5: Clear disconnect between stricter lending standards and still tight credit spreads. Which is right?



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Equities

Global equities have rallied strongly YTD as the long sovereign yields stabilized. The tech rally led to a strong US recovery, while the more industry-diversified Developed Europe and Japan also continued to do well.

Signs that long yields (the discounting factor for risk assets) have peaked led to a growth rally YTD (Chart 2) and supported US equities (which have a high technology concentration). Expectations of an AI-led new phase of productivity growth and increased corporate investments post the Inflation Reduction Act and the CHIPS Act also helped US equities. Japanese equities have made a strong comeback after decades of stagnation, with structural reforms in the last decade finally paying off (Chart 1).

Emerging markets (EM) significantly lagged the All-World and developed markets (DM) as DMs finally showed signs of dis-inflation and improved earnings expectations (Chart 4).

In other notable leadership shifts, large caps reclaimed the edge over small caps, particularly in DM (Chart 5), as the fallout from the banking crisis showed the importance of resilient balance sheets and cash positions. While dynamic (cyclical) industries have been doing better than defensives YTD (Chart 3), their monthly relative performance remains choppy as recessions fears remain.

Chart 1: Developed Europe, the US and Japan have performed strongly YTD; EM and Developed APAC ex Japan have lagged.

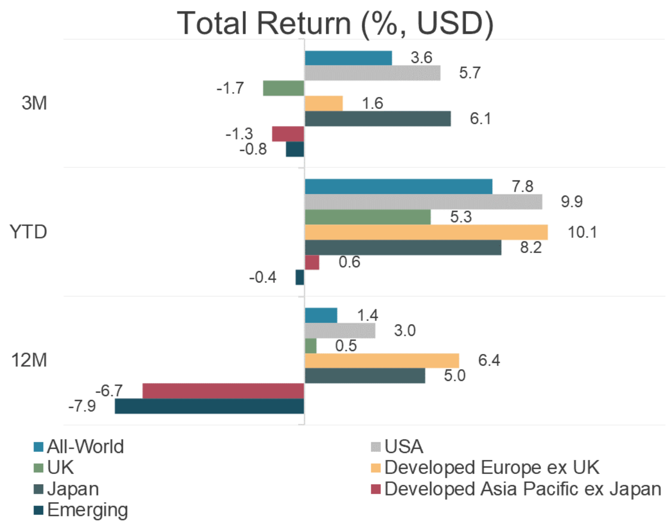


Chart 2: Growth made a strong comeback since end-2022, just as long yields (most important rate for risk assets) stabilized.

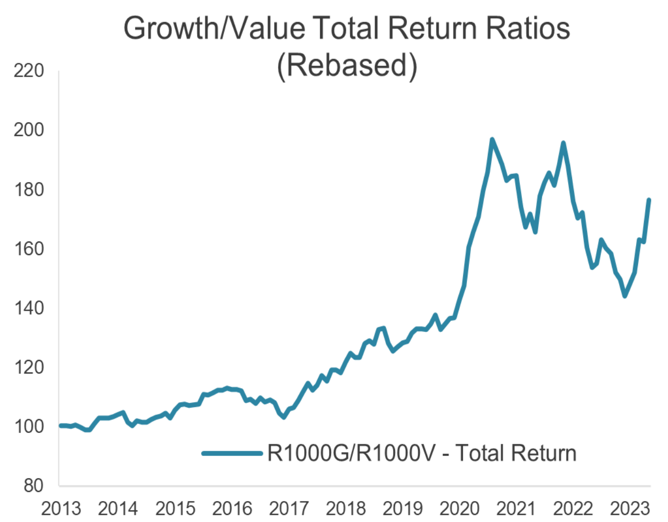


Chart 3: Cyclicals have outperformed since January, but m-o-m movements remain choppy on recession fears.

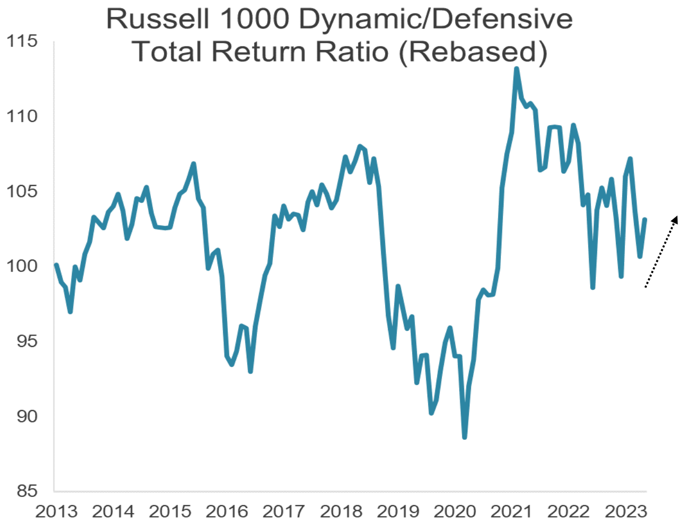


Chart 4: After a brief lull, DM continued their outperformance over EM, as DMs showed signs of disinflation at last.

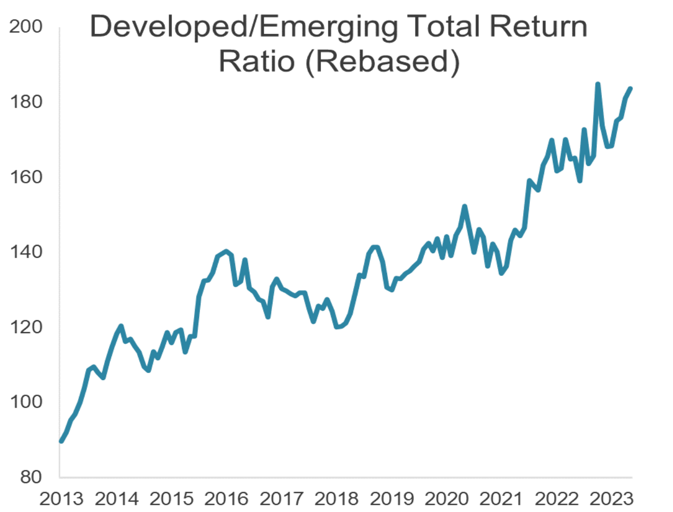
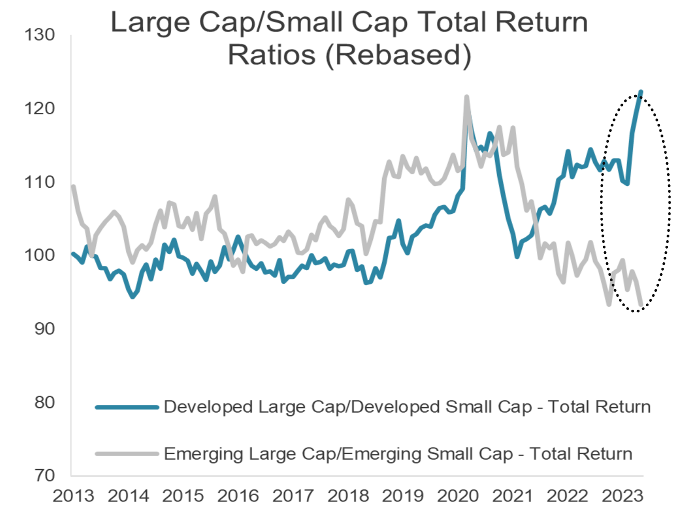


Chart 5: The rotation into DM large caps returned after the US banking crisis in March (stronger balance sheets & cash flows).



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Equities (continued)

Earnings growth forecasts and revisions have improved, particularly in developed markets as central banks start to regain control of inflation. The varying industry exposures in different equity markets remain key performance drivers (different industry sensitivities to a rapidly changing macro backdrop). The resulting high dispersion in industry returns keeps industry selection critical. Valuations in Japan and UK continue to remain cheap, while the US is back at its LT average.

The macro backdrop has evolved rapidly in the last year; high inflation and rapid policy rate increases resulted in stress in financial markets, followed by signs of inflation and long rates peaking and a recovery in long duration assets (Technology, Growth). This has increased the divergences in industry returns (Chart 1), with the spreads between the best and worst-performing industries over the last three months reaching almost 30% in the All-World index and 37% in the technology-concentrated US. The industry dispersion in Developed Europe ex UK and Japan were lower (27% & 20% respectively), given more diversified industry weights (Chart 2). Developed Europe & Japan benefited from their higher beta to global growth, which had ticked up in early 2023 after China reopened.

The upgraded GDP forecasts for many countries led to improving earnings growth & forecast revisions, particularly in the DMs, where inflation finally started coming off extreme highs (Chart 3 & 4). Valuations expanded in 2023, notably in the US, where they reached LT mean levels. Other markets remain cheap relative to the US and are still at a discount to 10yr averages (specially Japan and UK).

Chart 1: The technology-led growth rally and tech concentration have led to industry dispersion being highest in the US recently.

3M Regional Industry Returns (TR, USD)

	All-World	US	UK	Dev Eur ex UK	Japan	Dev AP ex JP	Emerging
Index Return	3.6	5.7	-17	1.6	6.1	-13	-0.8
Basic Materials	-5.9	-9.1	-12.0	-3.2	2.2	-4.0	-5.8
Consumer Disc.	3.1	4.1	3.5	2.4	6.8	-17	-5.2
Consumer Staples	1.0	13	-2.2	3.5	6.3	-6.6	-15
Energy	-6.4	-7.7	-11.2	-7.7	-2.9	-0.9	4.4
Financials	-6.8	-10.3	-2.3	-7.1	-4.6	-7.7	2.4
Health Care	2.9	13	6.3	9.3	7.6	16	-4.3
Industrials	-0.2	-3.1	3.2	2.0	8.6	1.1	0.8
Real Estate	-5.6	-4.7	-6.7	-16.5	0.7	-6.5	-10.0
Technology	21.5	26.2	14.7	10.0	15.5	12.9	-0.8
Telecoms	-0.9	-1.9	-12.6	0.0	0.5	4.6	1.9
Utilities	3.3	14	8.3	5.6	11.3	4.0	4.6

Chart 2: Industry weights expose differences in macro sensitivities. The US is concentrated while Europe is diversified.

Regional Industry Exposures (%)

	All-World	US	UK	Dev Eur ex UK	Japan	Dev AP ex JP	Emerging
Basic Materials	3.7	1.7	7.8	4.5	5.0	12.5	7.2
Consumer Disc.	13.8	13.9	11.2	13.7	23.2	8.8	12.2
Consumer Staples	6.4	5.5	17.1	9.2	5.7	3.9	6.6
Energy	4.8	4.3	12.0	4.0	0.7	3.5	6.2
Financials	13.8	9.8	18.2	16.1	10.4	26.3	22.8
Health Care	11.8	13.2	13.5	16.6	9.1	6.6	3.8
Industrials	12.8	11.5	12.4	17.8	25.9	9.9	8.0
Real Estate	2.5	2.5	1.4	0.9	3.6	7.2	2.3
Technology	24.6	32.3	0.7	9.8	11.1	17.0	23.2
Telecoms	2.7	2.4	1.5	3.3	4.0	1.6	4.4
Utilities	3.0	2.9	4.2	4.1	1.4	2.6	3.3

Chart 3: Earnings growth forecasts (%) have improved across major DMs, but remain almost flat in EM.

Chart 4: US earnings revisions (to 12M forward EPS estimates) have recently jumped on improved earnings expectations.

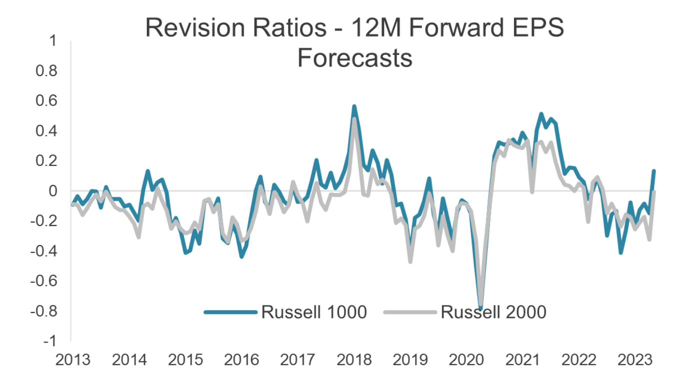


Chart 5: The US premium vs the rest of the world has widened again, as valuations rebounded most sharply in the US.

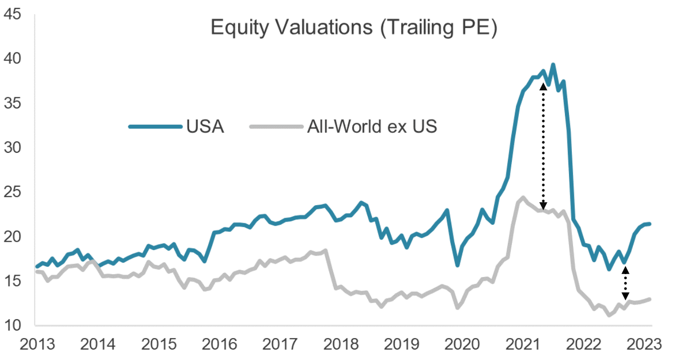
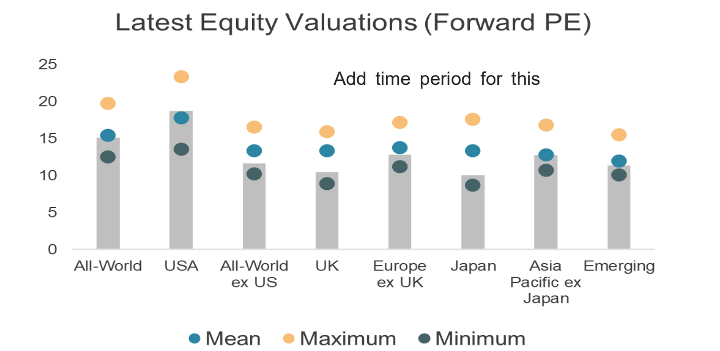


Chart 6: Current valuations are at LT mean in the US and other regions trade at a discount to LT mean (notably Japan & UK).



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Commodities

Commodity prices, notably oil & copper, have fallen due to slowing economic growth. Oil futures and FX markets (which are very efficient and forward looking) are signaling expectations of stable to falling commodity prices.

The historically negative correlation between moves in commodity prices and the US dollar has broken down since 2021 (Chart 3), which could reflect that a larger share of commodities is being traded in currencies other than the dollar. Meanwhile gold prices have been buoyed by increased central bank buying, another effect of increased geopolitical risk.

Commodity prices with a positive beta to global growth (oil and copper) have fallen with the deterioration in the macro outlook in 2022 and Chinese sub-par growth in the post-Covid era. With the currencies of commodity importers (blue bars) versus USD (Chart 5) having a return in line with that of commodity exporters (grey bars), currency markets seem to be expecting commodity prices to stabilize.

Commodities have underperformed equities YTD, but relative to equities, performance remains above their 2021 lows.

Chart 1: Futures curve shows market's belief that oil prices will weaken to $60-70/ barrel range, slightly above pre-Covid levels.

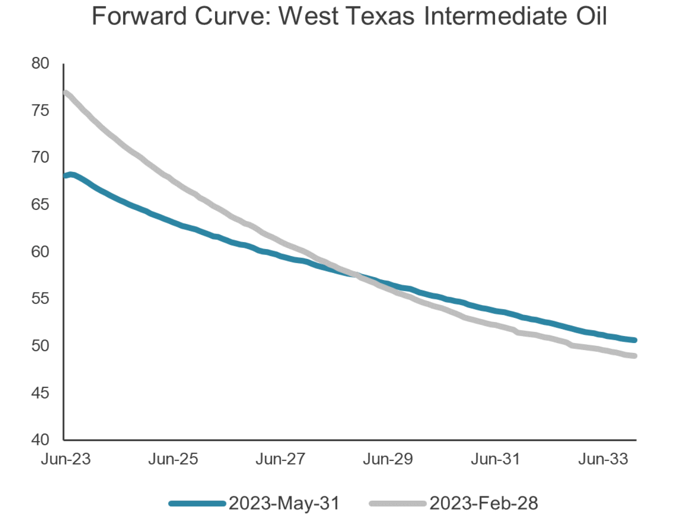


Chart 2: Commodity prices have broadly fallen over the last 3M & 12M. Gold is an exception (increased central bank buying).

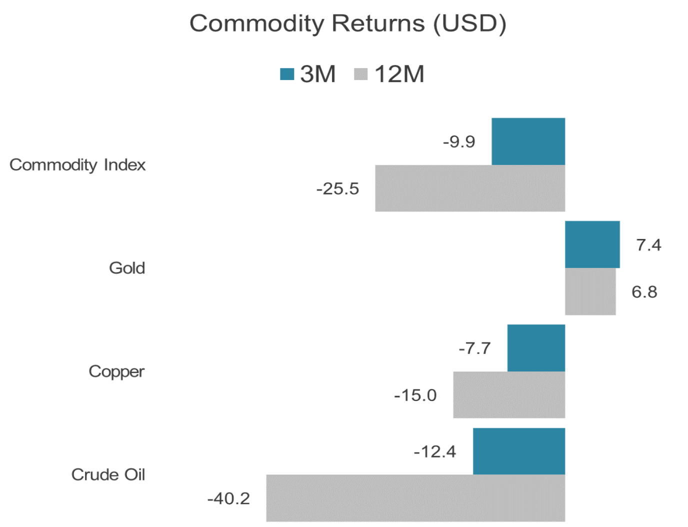


Chart 3: The typical negative correlation between commodities and the dollar has broken down since the Russian/Ukraine war.

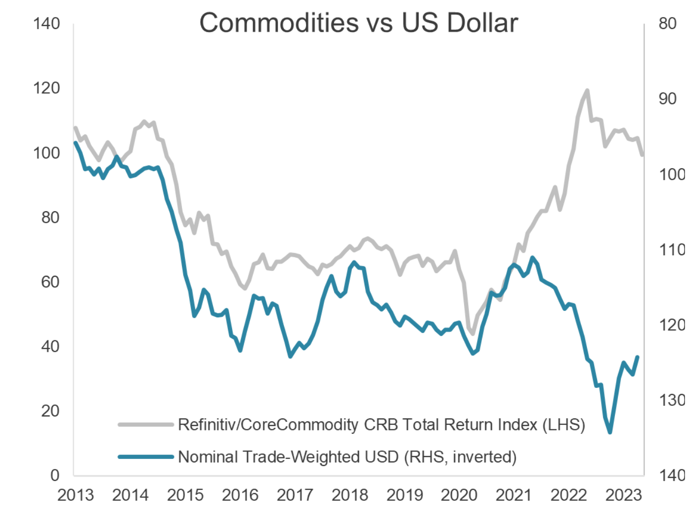


Chart 4: Commodities have underperformed global equities since Q4 2022, but have recovered from the LT trough in 2020.

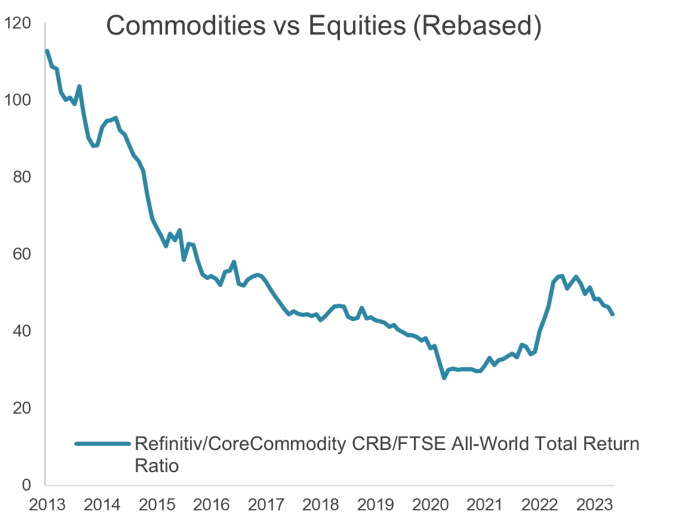
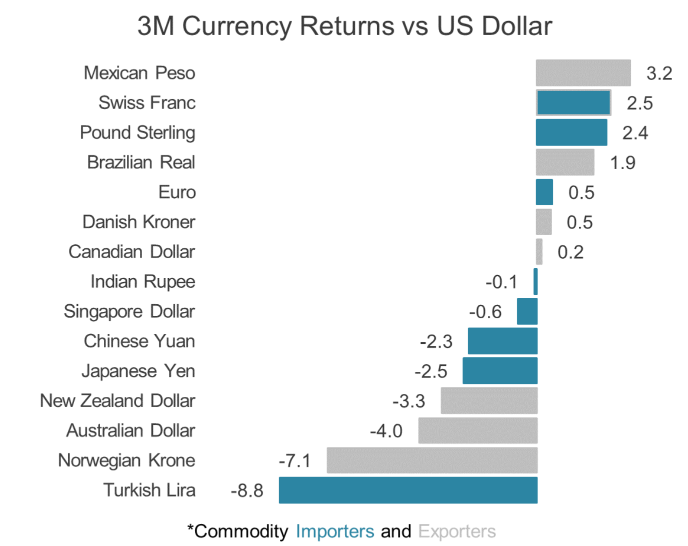


Chart 5: Currencies of commodity importers vs exporters in last 3M show investor belief in stable commodity prices.



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Real Assets: Listed Real Estate and Infrastructure

‘Higher for longer’ rates have taken a toll on listed real estate and infrastructure. Real estate is also facing structural headwinds post-Covid with the office sector underperforming the most. The deepest real estate losses were in countries with the highest inflation, indicating it provides an inflation hedge only if inflation is moderate.

Infrastructure returns have generally been less negative than in real estate over the last three and 12 months, though both broadly suffered losses. The risk premium (relative to equities) for infrastructure was positive only in EM.

The losses in real estate and its negative risk premium (relative to equites) were particularly acute in countries, with the highest inflation (UK and Developed Europe). The structural headwinds impacting real estate, due to societal changes post-Covid, are reflected by Office being the sector with the deepest losses (-34.3% in last 12M vs -14.6% in the overall EPRA Nareit Developed Index). The trend towards a more digital and online economy is reflected in Data Centers being the best performing sector.

Chart 1: Data centers & Speciality were the only real estate sectors with positive returns in the last 3M & 12M respectively.

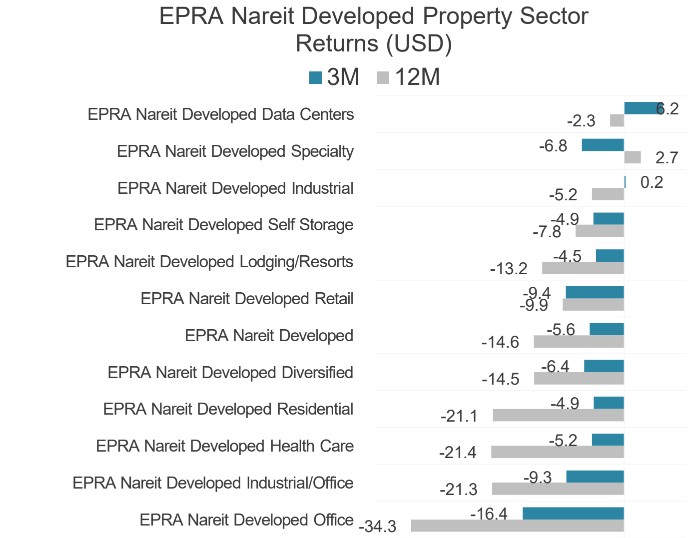


Chart 2: Listed real estate suffered large losses in most markets over the last 3M &12M (except Japan in the last 3M).

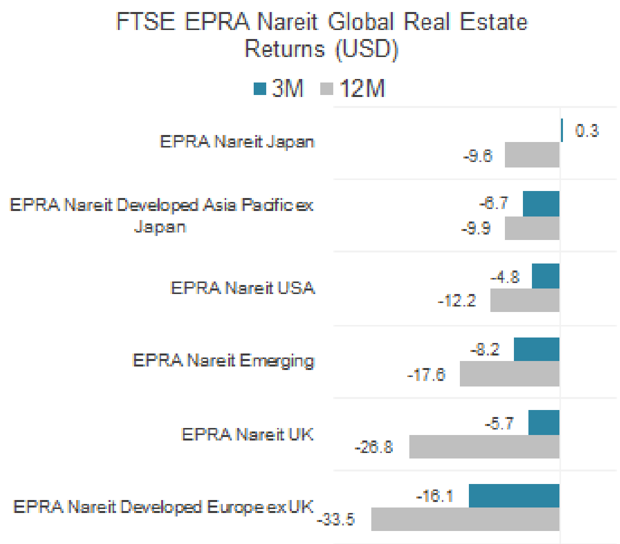


Chart 3: Core Infrastructure posted gains in EM and modest losses in DM over the last 3M, while most risk assets rallied.

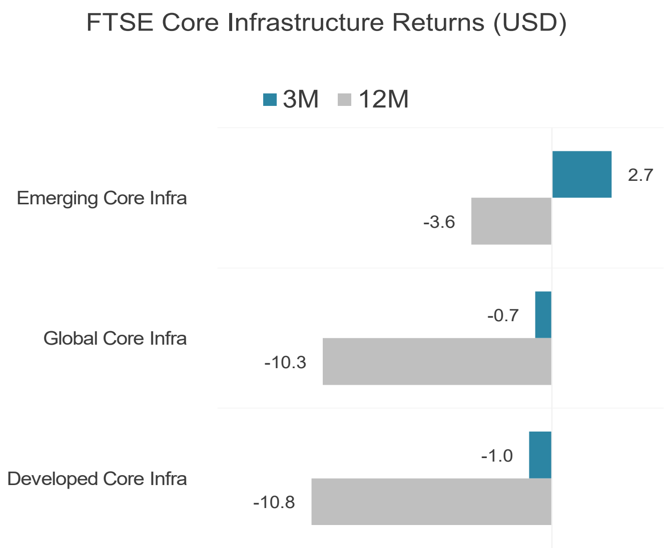


Chart 4: Listed real estate lagged equity for the 12M, particularly in the UK and Europe (highest inflation countries).

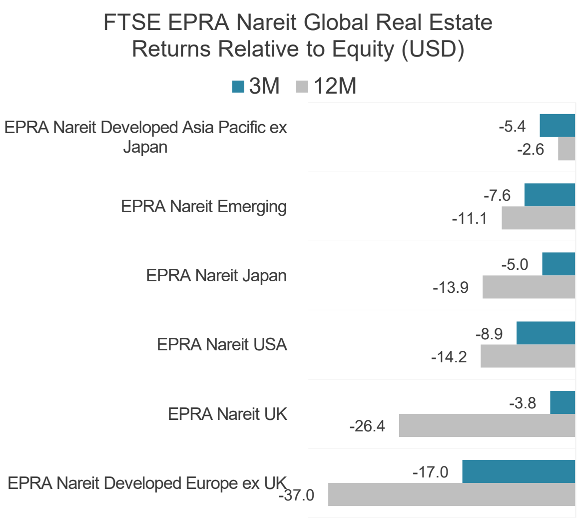
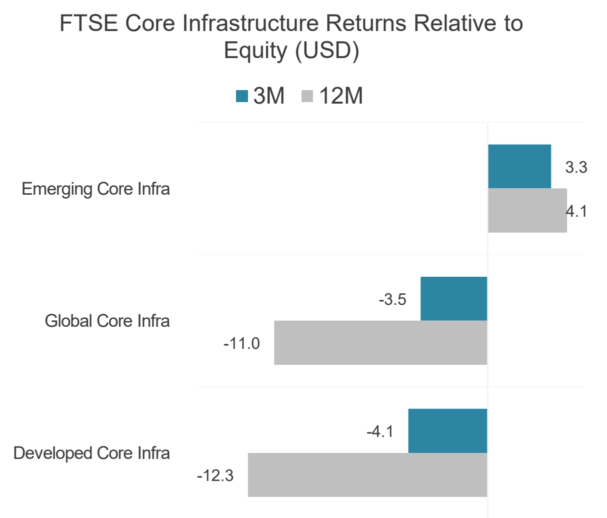


Chart 5: Core Infrastructure outperformed equities only in EM in the last 3M and 12M.



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Currencies

Tightening yield differentials and easing financial market stress have taken the wind out of the super-strong US dollar.

With its steep rise over the past decade (Chart 1), the trade-weighted US dollar reached extreme over-valuation in Q4 22 (> two standard deviations from its 10-year mean). The dollar rally has lost steam since October 2022 as the risk-on rally began.

Short-term interest-rate differentials are a key determinant of currency values (Chart 2-5). The Euro has strengthened since Q4 22 as rate differentials with US narrowed. The undervaluation of sterling also reversed since late last year, though both remain cheaper than their long term average. The yen remains extremely weak, given extreme rate differential with the US, while the CAD has not strengthened YTD in spite of narrowing rate differentials.

The US dollar tends to strengthen in periods of high market stress, when strong demand for safe havens drive capital flows into the reserve currency. **A weakening dollar is a positive sign for the global economy, eases financial conditions and supports large cap equities with their international exposure.**

Chart 1: The trade-weighted US dollar peaked in Oct 2022. LT patterns suggest it may fall further, esp. if economic stresses ease.

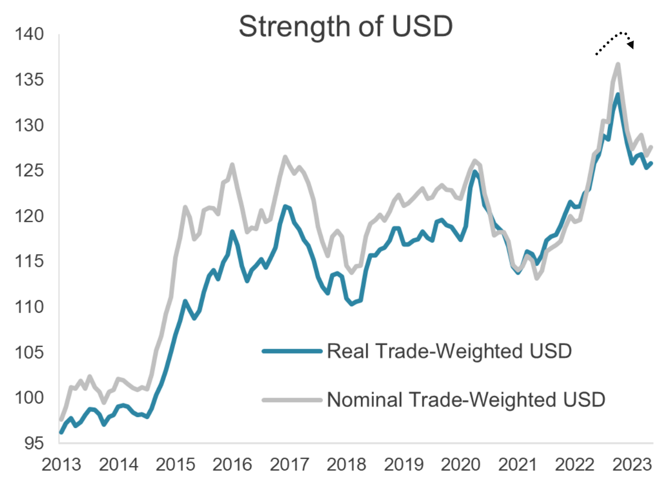


Chart 2: The Euro bottomed vs USD at the end-2022, as rate differentials narrowed, but remains 8% below its10-year average.

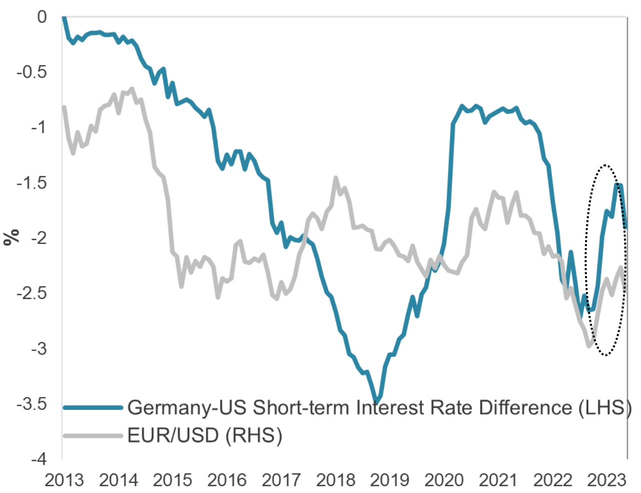


Chart 3: GBP bottomed versus USD at the end of 2022, as rate differentials narrowed, but is still 10% below its 10-year average.

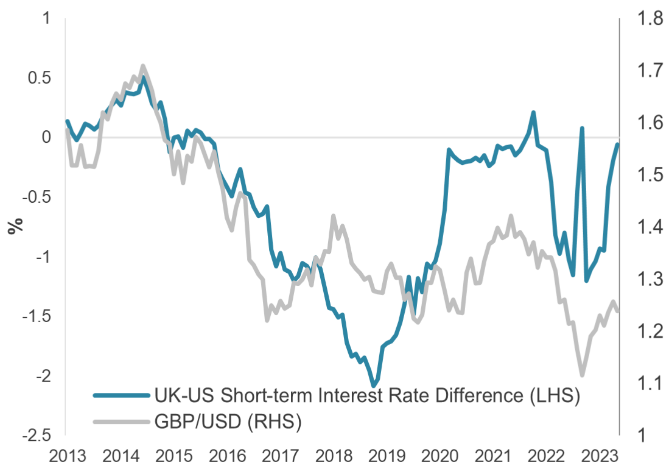


Chart 4: US-Japan rate differentials are at an all-time highs, underpinning the recent extreme weakness of the yen.

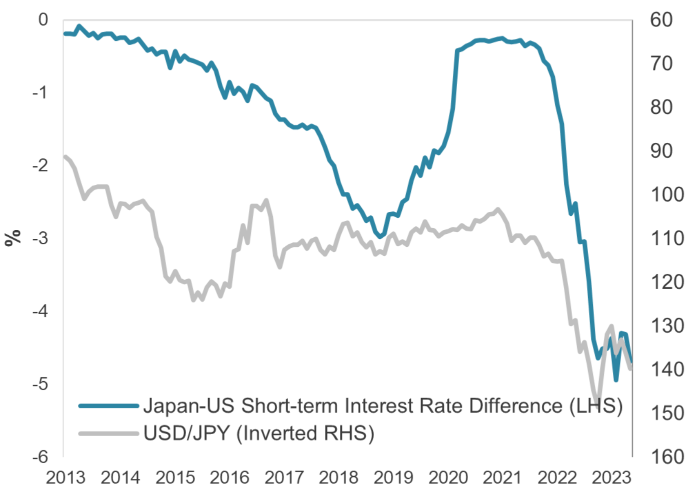
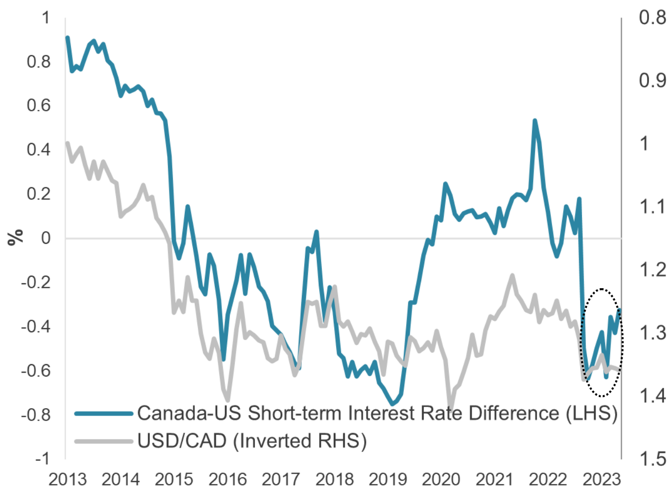


Chart 5: Canadian yields have moved closer to the US YTD, yet the CAD has depreciated versus the USD.



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Capital Flows

Capital flows reflect continuing investor caution with inflows into bonds and money markets, alongside outflows from equities. The interest in Japanese capital markets is strong and could indicate a structural shift with investor confidence in their economic and corporate governance reforms made over the last decade. Sector flows reflect the strength of the US consumer, and the headwinds for real estate and healthcare in the post-Covid era.

Bonds continued to see positive flows, though not as strong as in January and February, but positive in April and May, after an outflow in March. Money markets continued to be strong, although lower than the very large flows in March, driven by the banking crisis. Equities suffered outflows, with only two positive months in the last 12M, with investors exiting equities, particularly in the US.

SI flows were weak over the last 3M after showing strength at the end of 2022 and in early 2023. Patterns largely followed the broader market with positive flows into bonds and out of equities, which has been challenging for SI, as it has a greater focus in equities. The relatively underdeveloped SI money markets sector means SI investors have fewer options if they want to be more cautious.

YTD, US investors added funds to telecoms, consumer discretionary and consumer staples, while taking much larger sums out of healthcare and real estate. There is a lack of a clear pattern in the sector flows with both cyclical and defensive sectors featuring in inflows and outflows. The energy sector continued to see steady outflows as oil prices fell. Concerns about banking sector led to outflows from financials.

Chart 1: Bonds continue to see positive flows and money markets remained strong, while equities suffered outflows.

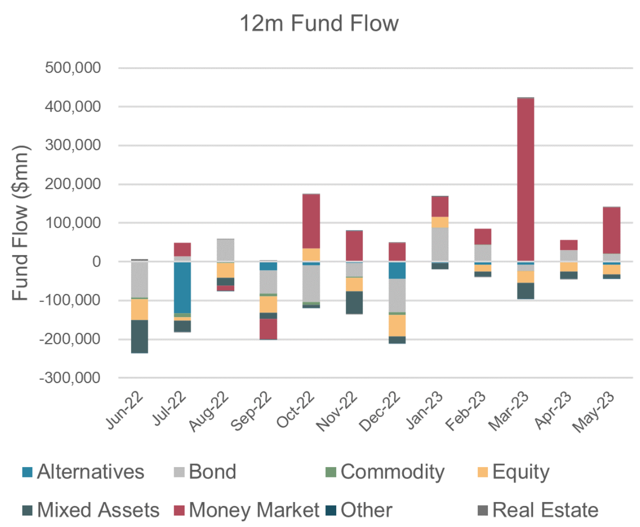


Chart 2: US sector flows reflect the consumer recovery and outflows from healthcare and real estate, which face headwinds.

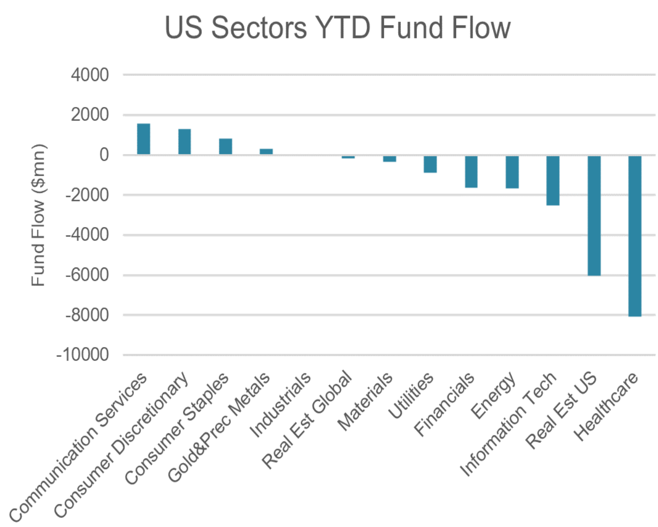


Chart 3: Bond flows into EM suffered from rising rates in DM over the last year. Flows into Japan were strong.

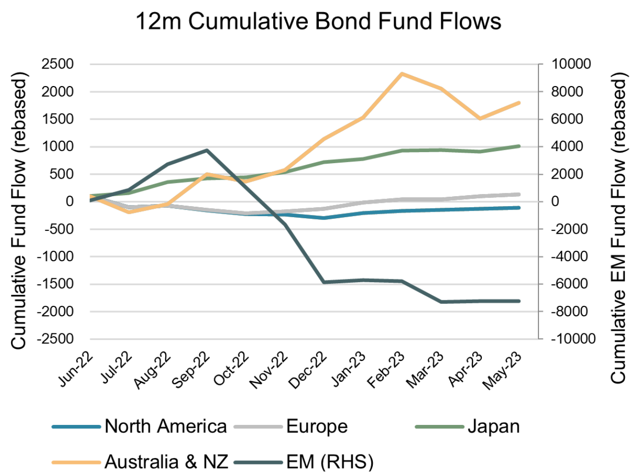
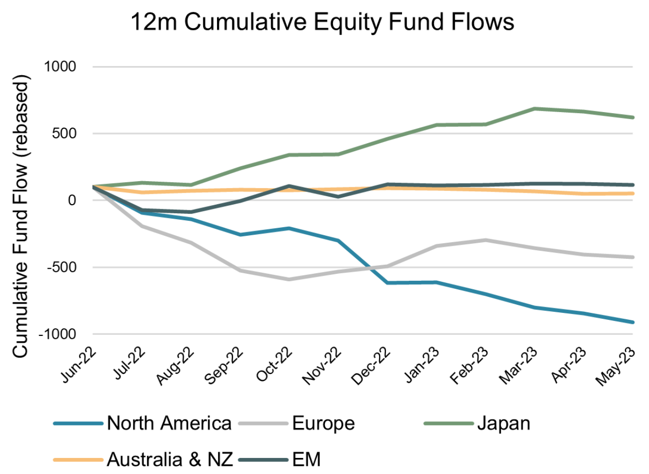


Chart 4: Equity flows reflect increased investor confidence in Japan. North America had continued to register outflows.



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Cross-Asset: Equities and Fixed Income

Historical trends in stock market capitalizations and stock/bond relationships indicate downside risk in equities, notably in the US, after the large valuation expansion since Q4 2022. The recent slight drop in stock-bond correlations, which should continue with a pause in rate hikes, offers hope for the 60/40 portfolio.

The total stock market capitalization/GDP ratio is a macro measure of equity valuations (Chart 1). It has always been higher for the US than the All-World (10-year average of 1.4x & 0.6x respectively), and unsurprising given the depth of the US financial market. Since 2021, this ratio for the US fell from above 2x to about 1.5x but is still 10% above its long-term average, while All-World index is 6% above its LT average; indicating that US equities are richly valued.

The stock/bond ratio (Chart 2) went from less than parity a decade ago to an all-time high of 1.5x in March 2022 and started falling when rate hikes began. At 1.4x currently, it remains above pre-Covid levels and long-term average of 1.2x. While some of the extreme frothiness has been squeezed out of equities, they remain overvalued per historical norms. To reach equilibrium, equities would have to fall further or bond prices to move higher (another indicator that bond yields have room to fall). A similar disconnect has emerged between the risk premia of equities and high yield credit (Chart 4), two risky and typically highly correlated asset classes. The equity risk premium is currently much lower than that of HY, which again implies room for equity valuations to contract.

The historically low correlation (average 30%) between stocks and bonds is the basis for the 60/40 portfolio. This correlation spiked in 2022, when rates hikes drove both asset classes lower, with the correlation reaching an all-time high of 85% in early 2023 (Chart 4). The recent slight decrease could be expected to continue with the pause in rate hikes, and again provide diversification benefits.

Chart 1: Market cap relative to the real economy is 6% above its 10-year average globally, and 10% in the US.

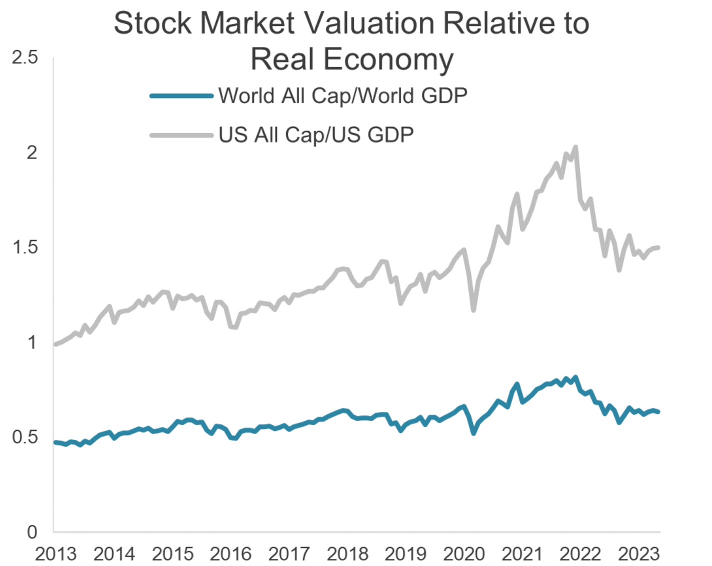


Chart 2: While lower than the peak in March 22, when rate hikes began, relative stock/bond market values remain high.

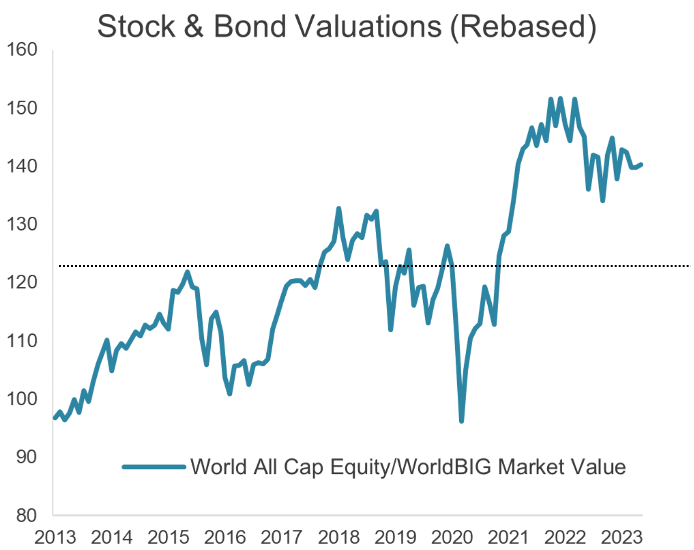


Chart 3: Stock/bond correlations have rolled over since the March banking crisis. Pause in rate hikes could reduce it further.

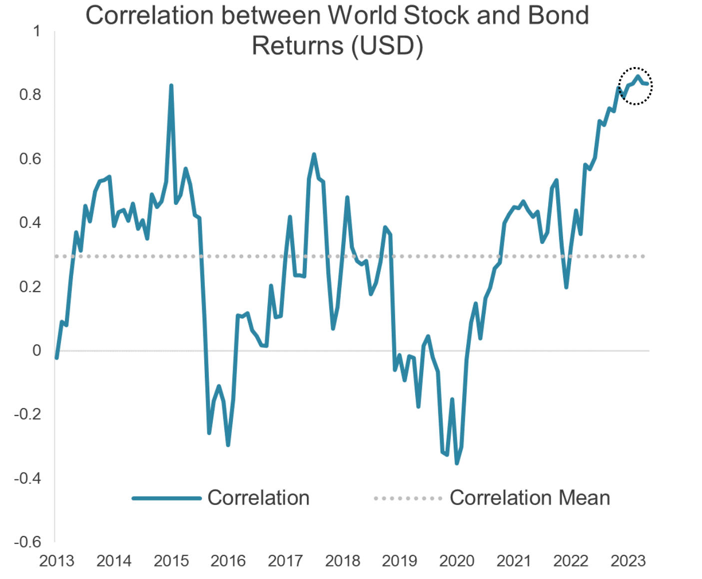
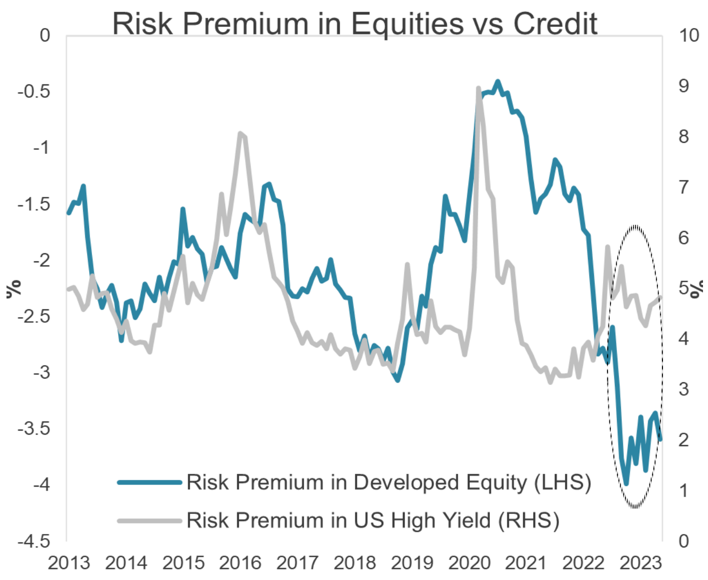


Chart 4: The US equity risk premium is unusually low relative to US HY credit spreads, suggesting downside risk for equities.



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Cross Asset: Return and Risk

Which is the best asset class? It depends on the goals of the investor. Equities and commodities have characteristics that appeal to total-return investors. Income-oriented equity investors should note the high dividend (income) yield in Developed European equities. Real estate and infrastructure provide higher income. Fixed income sold off sharply in 2022 and now pays earnings yields matching those of infrastructure & its income yield is higher than infrastructure and has low volatility.

Based on the broadest FTSE Russell indices in equities, fixed income, commodities, real estate & infrastructure, almost every asset class delivered negative returns over the past year. Even the asset class with highest total return (equity) returned barely 1.4%. For income investors, real assets such as real estate and infrastructure are more attractive than equities. However, the income (dividend yield) in equities varies significantly among regions, with income yield in Developed Europe equity matching that of infrastructure.

In real assets, infrastructure outperformed real estate over one and five-year periods, with higher returns and risk-adjusted returns. Infrastructure (ports, bridges, etc.) tends to have longer, and government regulated, leases, which protect their revenue streams, while retail and commercial real estate is affected by shorter-duration leases and rising vacancy rates. Infrastructure projects also involve fewer players and more stable revenue streams.

The spike in interest rates over the past year has made fixed income a competitive asset class, with earnings yields now roughly in line with those of infrastructure. The equity earnings yield differential with fixed income has narrowed sharply over the last 15 months.

Chart 1: Equities for total return, real estate & infrastructure for income, fixed income for low volatility? Every asset has a role!

1Y Annualized	USD Total Return %	Income Yield %	Risk	Return/Risk
Equity	1.4	2.3	20.0	0.1
Fixed Income	-4.4	3.6	10.8	-0.4
Commodities	-16.7	--	11.6	-1.4
Real Estate	-14.8	4.2	22.1	-0.7
Infrastructure	-10.3	3.2	18.5	-0.6

5Y Annualized	USD Total Return %	Income Yield %	Risk	Return/Risk
Equity	7.3	2.2	17.5	0.4
Fixed Income	-1.3	1.8	6.8	-0.2
Commodities	6.3	--	20.0	0.3
Real Estate	-0.4	4.0	19.0	0.0
Infrastructure	6.0	3.2	15.4	0.4

Chart 2: Dividend yields are lowest in the US and highest in EM. Developed Europe has a dividend yield 2x that of the US.

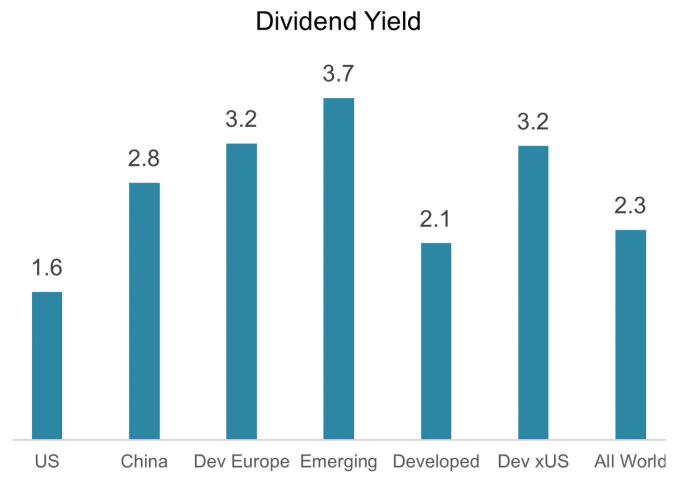
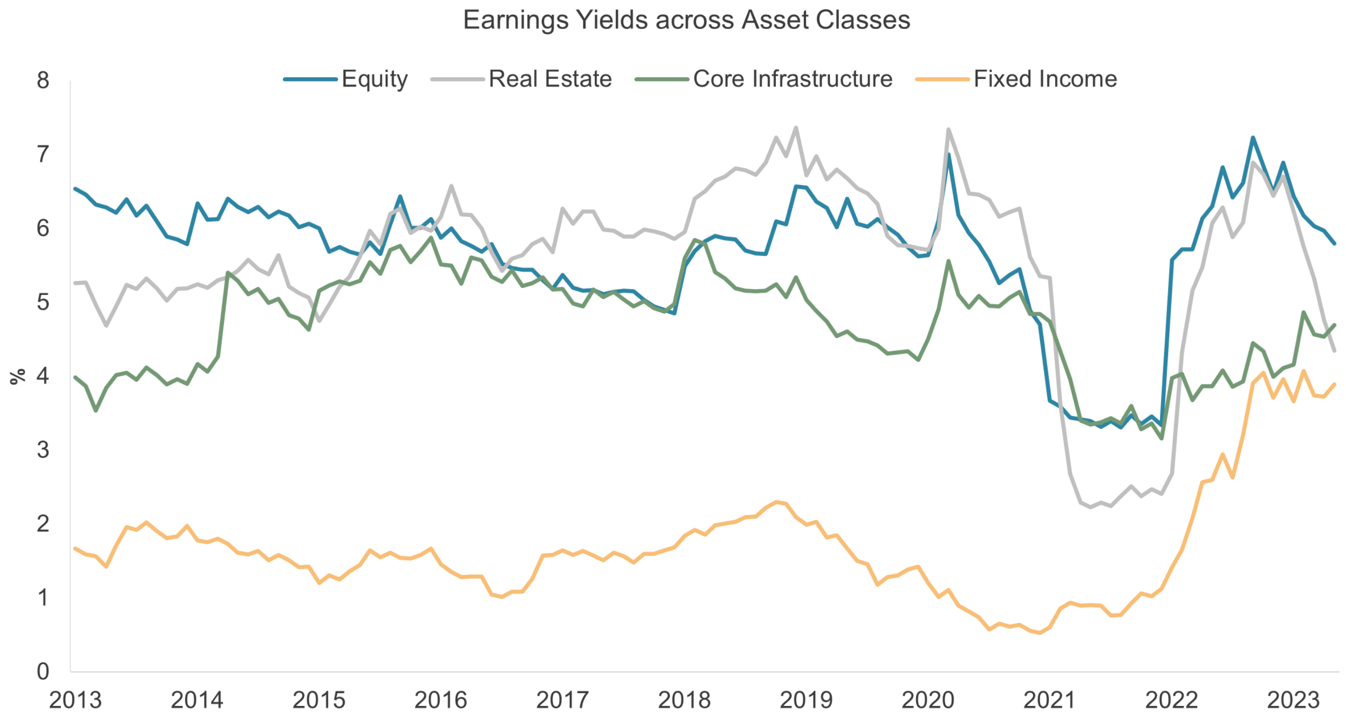


Chart 3: Earnings yield (EY=E/P) has fallen sharply in real estate and (less so) in equities, and remained fairly steady in infrastructure and increased sharply in fixed income. Equities (more volatile than fixed income) compensate investors with higher EY.



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Cross Asset: Return and Risk

Developed Europe ex UK and Japanese equities have shone in the last year, overtaking the long winning US equities. Fixed income volatility has been less than half that of equities, while HY provided superior risk-adjusted returns versus IG.

Over the past three years, most equity markets have had volatility in the 15-23% range, while bond market volatility has been around 7%, half or less than that of equities. Over the last year, both equities and fixed income became more volatile, due to consistently increasing policy rates.

Over the last year, Developed European and Japanese equities made a strong comeback, exceeding the returns of US equities. Over 12 months and three years, large caps in both US and UK have had better risk-adjusted return than small caps. Over the last three years, EM equities lagged most DM equities, though contrary to common perception, had volatility in line or lower than that of most developed markets. In terms of return per unit of risk over one year, gold did best, followed by Developed Europe ex UK and Japanese equities, and high yield did better than investment grade (both in US and globally). Over three years, crude oil had the highest risk-adjusted returns (on the back of its sharp rally following the war in Ukraine), followed closely by US large caps.

Chart 1: One-Year Risk-Return of Different Asset Classes – Equity volatility was much higher in last 12M (compared to longer 3 years). Returns turned positive in many markets, with Developed Europe ex UK & Japan equities, alongside Gold having the highest return.

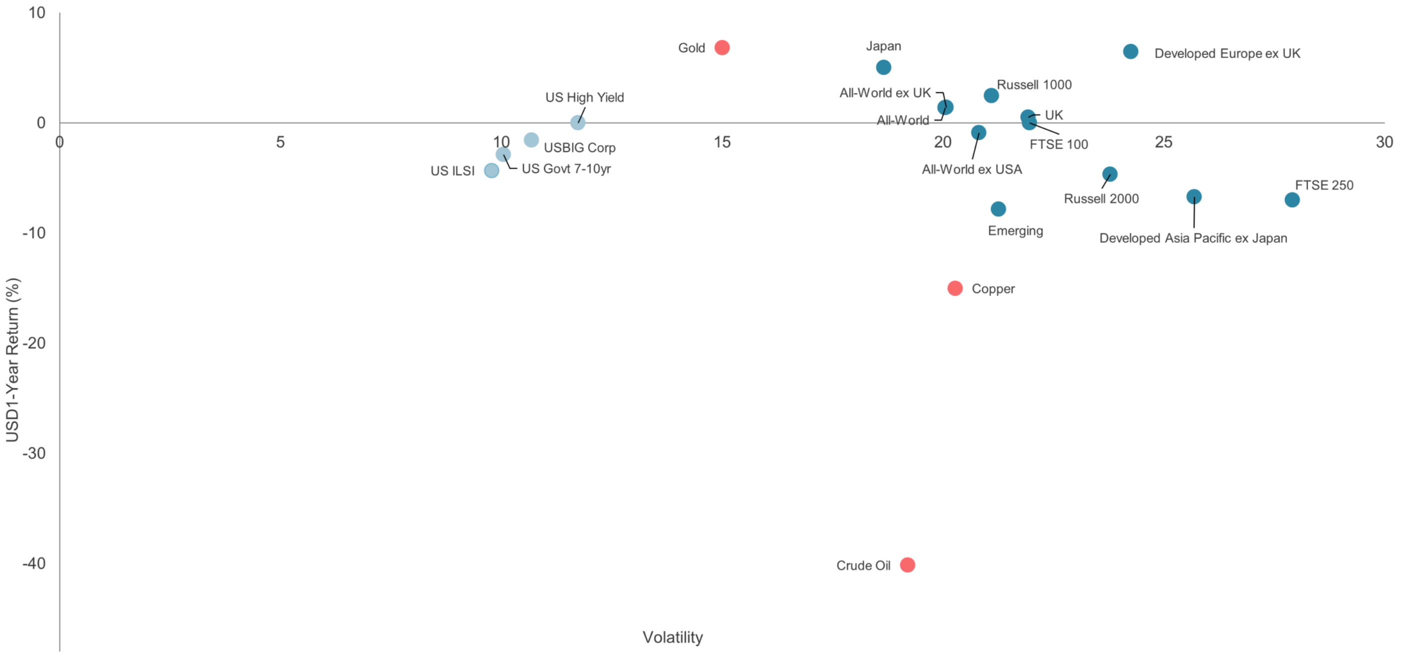
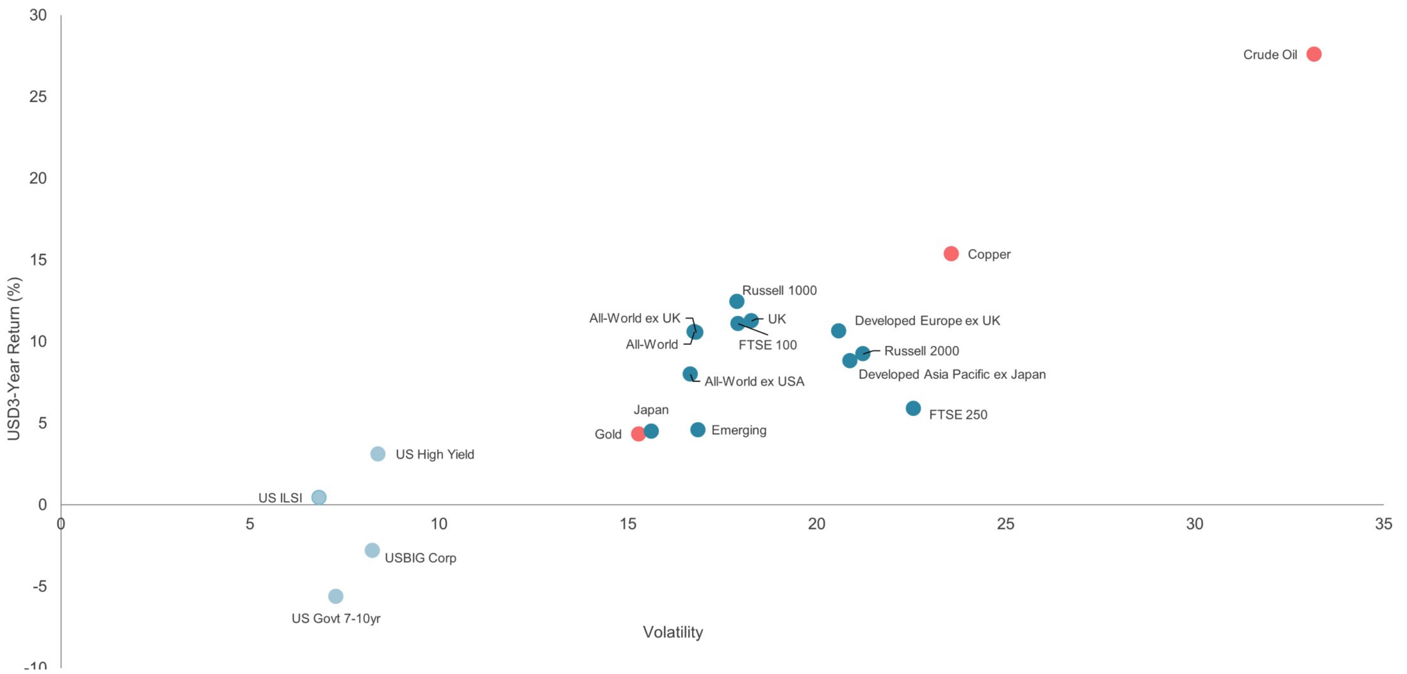


Chart 2: Three-Year Risk-Return of Different Asset Classes – DMs equities outperformed EMs, while EM had lower volatility. Large caps outperformed small caps with higher return and lower volatility (Russell 1000 vs Russell 2000, FTSE 100 vs FTSE 250).



Source: FTSE Russell/Refinitiv. All data as of May 31, 2023. Past performance is no guarantee of future results. This report should not be considered "research" for the purposes of MIFID II. Please see the end for important legal disclosures. Results in this report are for research / illustrative purposes and do not represent the official performance of the indices.

Cross Asset: Correlations

Correlations between stocks and sovereign bonds have turned sharply positive over the past year as rates drove equities.

The correlation between the Russell 1000 and the US 7-10 year Treasury yield rose from 54% over the three-year post-Covid period to 71% over the past year, while correlations to global sovereign yields climbed from 67% to 78% and those with US TIPs (real yields) went from 75% to 91% over the same period. These changes highlight (1) bond yields have dominated equity performance over the past year (2) global rates have been a bigger influence than US rates on US stock behavior, which is not surprising given the significant international revenue and earnings exposure of the Russell 1000, and open US financial markets (3) real rates matter more than nominal rates, hence the focus of risk assets on both inflation and nominal rates.

Chart 1: 1-Year Correlation – Equities have been driven mainly by real yields in the last year. Stock-bond diversification comes from investment grade, while high yield is very correlated to equities. Commodities like gold & oil have provided diversification to equities.

	Russell 1000	Russell 2000	All-World	All-World ex USA	UK	Dev Europe ex UK	Japan	Dev Asia Pac ex Japan	Emerging	US Govt 7-10yr	US ILSI	US High Yield	USBIG Corp	World Govt 7-10yr	World ILSI	World HY	WBIG Corp	Global Core Infra-structure	EPRA Nareit Global	Gold	Crude Oil
Russell 1000		0.90	0.97	0.83	0.81	0.86	0.86	0.82	0.55	0.71	0.91	0.93	0.77	0.78	0.87	0.92	0.79	0.84	0.87	0.37	0.28
Russell 2000	0.90		0.85	0.69	0.72	0.74	0.69	0.70	0.39	0.47	0.73	0.86	0.57	0.53	0.65	0.82	0.58	0.68	0.81	0.08	0.36
All-World	0.97	0.85		0.94	0.89	0.94	0.94	0.92	0.71	0.78	0.92	0.92	0.87	0.86	0.92	0.94	0.89	0.90	0.93	0.52	0.25
All-World ex USA	0.83	0.69	0.94		0.93	0.96	0.95	0.99	0.87	0.80	0.84	0.80	0.92	0.90	0.89	0.89	0.95	0.90	0.93	0.68	0.18
UK	0.81	0.72	0.89	0.93		0.98	0.83	0.88	0.68	0.68	0.77	0.80	0.80	0.80	0.81	0.88	0.86	0.86	0.91	0.50	0.37
Developed Europe ex UK	0.86	0.74	0.94	0.96	0.98		0.88	0.90	0.70	0.74	0.83	0.86	0.85	0.87	0.89	0.93	0.91	0.86	0.92	0.60	0.32
Japan	0.86	0.69	0.94	0.95	0.83	0.88		0.96	0.84	0.82	0.89	0.83	0.93	0.90	0.91	0.89	0.94	0.90	0.88	0.65	0.16
Dev Asia Pacific ex Japan	0.82	0.70	0.92	0.99	0.88	0.90	0.96		0.90	0.77	0.81	0.78	0.91	0.86	0.86	0.87	0.92	0.89	0.91	0.67	0.11
Emerging	0.55	0.39	0.71	0.87	0.68	0.70	0.84	0.90		0.75	0.63	0.48	0.86	0.78	0.71	0.60	0.83	0.76	0.73	0.77	-0.14
US Govt 7-10yr	0.71	0.47	0.78	0.80	0.68	0.74	0.82	0.77	0.75		0.85	0.65	0.96	0.96	0.90	0.69	0.93	0.80	0.77	0.74	0.12
US ILSI	0.91	0.73	0.92	0.84	0.77	0.83	0.89	0.81	0.63	0.85		0.86	0.87	0.88	0.96	0.87	0.87	0.89	0.86	0.53	0.21
US High Yield	0.93	0.86	0.92	0.80	0.80	0.86	0.83	0.78	0.48	0.65	0.86		0.75	0.74	0.83	0.98	0.78	0.79	0.86	0.32	0.34
USBIG Corp	0.77	0.57	0.87	0.92	0.80	0.85	0.93	0.91	0.86	0.96	0.87	0.75		0.97	0.92	0.82	0.99	0.88	0.88	0.75	0.12
World Govt 7-10yr	0.78	0.53	0.86	0.90	0.80	0.87	0.90	0.86	0.78	0.96	0.88	0.74	0.97		0.95	0.81	0.98	0.86	0.83	0.79	0.20
World ILSI	0.87	0.65	0.92	0.89	0.81	0.89	0.91	0.86	0.71	0.90	0.96	0.83	0.92	0.95		0.87	0.94	0.87	0.88	0.71	0.11
World HY	0.92	0.82	0.94	0.89	0.88	0.93	0.89	0.87	0.60	0.69	0.87	0.98	0.82	0.81	0.87		0.86	0.84	0.90	0.46	0.31
WBIG Corp	0.79	0.58	0.89	0.95	0.86	0.91	0.94	0.92	0.83	0.93	0.87	0.78	0.99	0.98	0.94	0.86		0.89	0.89	0.77	0.19
Global Core Infrastruc-ture	0.84	0.68	0.90	0.90	0.86	0.86	0.90	0.89	0.76	0.80	0.89	0.79	0.88	0.86	0.87	0.84	0.89		0.85	0.52	0.24
EPRA Nareit Global	0.87	0.81	0.93	0.93	0.91	0.92	0.88	0.91	0.73	0.77	0.86	0.86	0.88	0.83	0.88	0.90	0.89	0.85		0.54	0.15
Gold	0.37	0.08	0.52	0.68	0.50	0.60	0.65	0.67	0.77	0.74	0.53	0.32	0.75	0.79	0.71	0.46	0.77	0.52	0.54		-0.19
Crude Oil	0.28	0.36	0.25	0.18	0.37	0.32	0.16	0.11	-0.14	0.12	0.21	0.34	0.12	0.20	0.11	0.31	0.19	0.24	0.15	-0.19	

Chart 2: 3-Year Correlation – US equities are more correlated to US high yield than to EM equities, indicating risk drivers matter more than asset class classification. Listed real assets have a high beta to equities. US equities driven more by global rates than US rates.

	Russell 1000	Russell 2000	All-World	All-World ex USA	UK	Dev Europe ex UK	Japan	Dev Asia Pac ex Japan	Emerg-ing	US Govt 7-10yr	US ILSI	US High Yield	USBIG Corp	World Govt 7-10yr	World ILSI	World HY	WBIG Corp	Global Core Infra-structure	EPRA Nareit Global	Gold	Crude Oil
Russell 1000		0.86	0.98	0.86	0.79	0.88	0.74	0.80	0.58	0.54	0.75	0.84	0.69	0.67	0.77	0.85	0.73	0.80	0.88	0.25	0.35
Russell 2000	0.86		0.86	0.79	0.73	0.77	0.73	0.80	0.56	0.34	0.57	0.79	0.54	0.50	0.57	0.78	0.58	0.61	0.78	0.04	0.46
All-World	0.98	0.86		0.94	0.87	0.94	0.81	0.89	0.70	0.58	0.76	0.85	0.74	0.73	0.79	0.88	0.80	0.82	0.92	0.32	0.38
All-World ex USA	0.86	0.79	0.94		0.92	0.95	0.85	0.95	0.84	0.58	0.69	0.78	0.76	0.76	0.76	0.86	0.83	0.77	0.89	0.40	0.39
UK	0.79	0.73	0.87	0.92		0.93	0.73	0.84	0.63	0.44	0.58	0.69	0.58	0.61	0.64	0.76	0.68	0.73	0.88	0.28	0.47
Dev Europe ex UK	0.88	0.77	0.94	0.95	0.93		0.78	0.86	0.66	0.56	0.68	0.79	0.73	0.72	0.75	0.86	0.80	0.77	0.90	0.35	0.42
Japan	0.74	0.73	0.81	0.85	0.73	0.78		0.79	0.63	0.55	0.61	0.73	0.67	0.67	0.62	0.77	0.71	0.63	0.68	0.19	0.30
Dev Asia Pac ex Japan	0.80	0.80	0.89	0.95	0.84	0.86	0.79		0.83	0.49	0.65	0.71	0.70	0.68	0.70	0.79	0.76	0.74	0.87	0.41	0.35
Emerging	0.58	0.56	0.70	0.84	0.63	0.66	0.63	0.83		0.52	0.53	0.56	0.72	0.69	0.62	0.67	0.76	0.54	0.65	0.49	0.21
US Govt 7-10yr	0.54	0.34	0.58	0.58	0.44	0.56	0.55	0.49	0.52		0.81	0.58	0.90	0.91	0.81	0.61	0.86	0.46	0.52	0.49	-0.02
US ILSI	0.75	0.57	0.76	0.69	0.58	0.68	0.61	0.65	0.53	0.81		0.76	0.81	0.84	0.93	0.76	0.81	0.66	0.71	0.49	0.12
US High Yield	0.84	0.79	0.85	0.78	0.69	0.79	0.73	0.71	0.56	0.58	0.76		0.76	0.73	0.76	0.98	0.80	0.67	0.73	0.30	0.40
USBIG Corp	0.69	0.54	0.74	0.76	0.58	0.73	0.67	0.70	0.72	0.90	0.81	0.76		0.93	0.85	0.80	0.97	0.59	0.68	0.47	0.14
World Govt 7-10yr	0.67	0.50	0.73	0.76	0.61	0.72	0.67	0.68	0.69	0.91	0.84	0.73	0.93		0.91	0.80	0.97	0.57	0.64	0.62	0.12
World ILSI	0.77	0.57	0.79	0.76	0.64	0.75	0.62	0.70	0.62	0.81	0.93	0.76	0.85	0.91		0.80	0.89	0.69	0.74	0.63	0.15
World HY	0.85	0.78	0.88	0.86	0.76	0.86	0.77	0.79	0.67	0.61	0.76	0.98	0.80	0.80	0.80		0.87	0.69	0.78	0.39	0.40
WBIG Corp	0.73	0.58	0.80	0.83	0.68	0.80	0.71	0.76	0.76	0.86	0.81	0.80	0.97	0.97	0.89	0.87		0.63	0.72	0.56	0.19
Global Core Infrastruc-ture	0.80	0.61	0.82	0.77	0.73	0.77	0.63	0.74	0.54	0.46	0.66	0.67	0.59	0.57	0.69	0.69	0.63		0.81	0.35	0.28
EPRA Nareit Global	0.88	0.78	0.92	0.89	0.88	0.90	0.68	0.87	0.65	0.52	0.71	0.73	0.68	0.64	0.74	0.78	0.72	0.81		0.29	0.33
Gold	0.25	0.04	0.32	0.40	0.28	0.35	0.19	0.41	0.49	0.49	0.49	0.30	0.47	0.62	0.63	0.39	0.56	0.35	0.29		-0.03
Crude Oil	0.35	0.46	0.38	0.39	0.47	0.42	0.30	0.35	0.21	-0.02	0.12	0.40	0.14	0.12	0.15	0.40	0.19	0.28	0.33	-0.03	

Source: FTSE Russell/Refinitiv. All data as of May 31, 2023. Past performance is no guarantee of future results. This report should not be considered "research" for the purposes of MIFID II. Please see the end for important legal disclosures. Results in this report are for research / illustrative purposes and do not represent the official performance of the indices.

Cross Asset: Correlations (continued)

Consistently high correlations between equities and high-yield credit show that stock/bond diversification benefits come primarily from investment-grade bonds.

As the riskiest part of fixed income, high-yield corporates have typically been highly correlated with equities (ranging from 84% to 93%). Investment-grade is typically far less correlated to equities than to HY. The diversification benefits implied in the 60/40 portfolio are driven mainly by sovereign bonds and investment-grade corporates.

Falling correlations between developed and emerging markets provide diversification benefits

Within equities, US markets are most correlated with Developed Europe ex UK, while correlations with most other developed markets are stable at high levels. The correlation between US and EM equities fell to 55% last year, while those between DM and EM equities fell to 63%, a trend in-line with the diverging economic paths of the US and China, and the world becoming increasingly economically bi-polar.

Commodities are a diverse asset class, and provide significant diversification benefits

Commodities can be volatile, with long periods of underperformance vs equities. Less appreciated are the diversification benefits in portfolio construction, and the large variation among different commodities. Gold performed well in the recent high inflation, rising rate environment, along with increased purchases by many central banks to hedge political risks. With a three-year correlation to US large-cap equities of 25% (37% over the past year), the precious metal provided diversification. On the other hand, the three-year correlation between oil prices and US large-cap equities was 35% (both have a positive beta to economic growth), but that dropped to 28% over the past year as geopolitical stresses from the Russia/Ukraine war affected each asset class in opposing ways.

Listed real assets have a high beta to listed equities

Listed real estate and infrastructure are driven by forces specifically related to these real assets. However, being listed, they also have a high beta to listed equities. The correlation of listed real estate and infrastructure to US large-cap equities has remained north of 80% over the last three years.

Chart 1: Equity Market Correlations – US equities have the highest correlation with Developed Europe ex UK and lowest with EM.

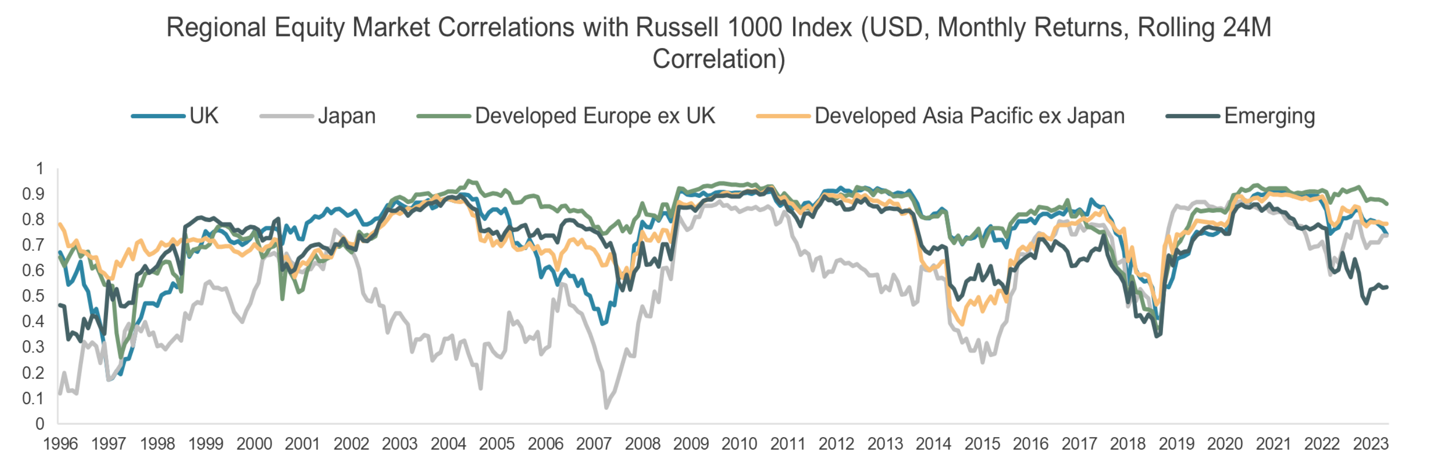
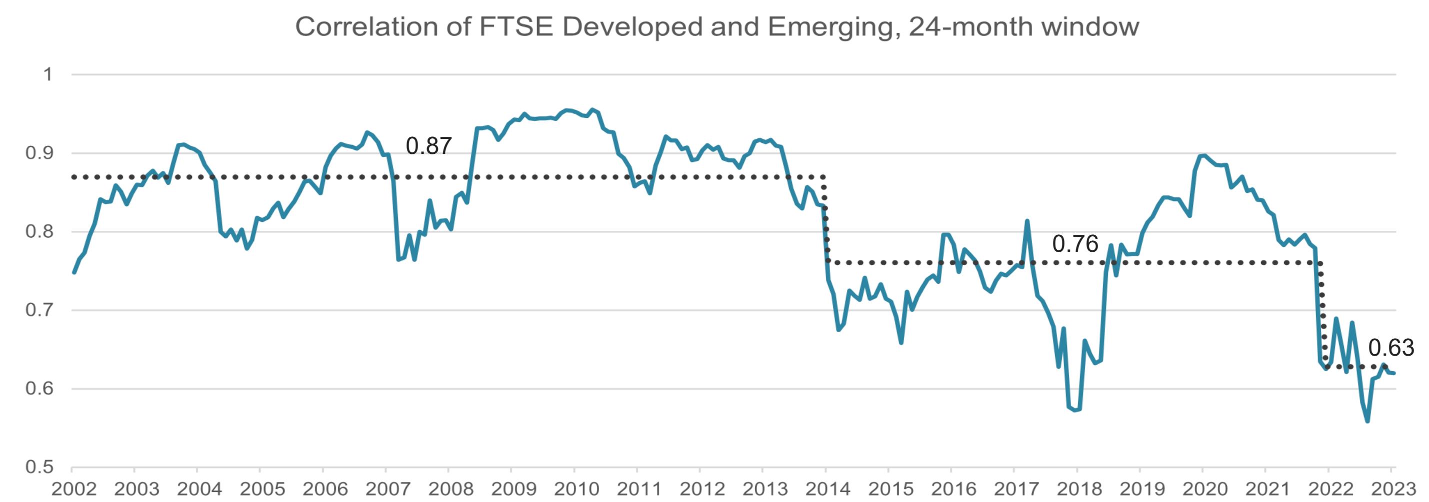


Chart 2: The correlation between DM and EM equities has been dropping consistently and is currently at a new low.



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Appendix 1: List of indices used in report

Name	Mnemonic/Code
World Government Bond Index 1-3yr	WGBI_1-3
World Government Bond Index 7-10yr	WGBI_7-10
World Inflation-Linked Securities Index 7-10yr	ILSI_7-10
US Treasury 1-3yr	US_TSY1-3
US Treasury 7-10yr	US_TSY7-10
Germany 1-3yr	DE_TSY1-3
Germany 7-10yr	DE_TSY7-10
World Broad Investment-Grade Bond Index Corporate	WBIG_CORP
US Broad Investment-Grade Bond Index Corporate	BIG_CORP
Euro Broad Investment-Grade Bond Index Corporate	EBIG_CORP
Emerging Markets Corporate Capped Extended Broad Bond Index – Investment-Grade	EMBBICCE_IG
US High-Yield Market Index	HY_MKT_US
European High-Yield Market Index	EUROPE_HYM
Emerging Markets Corporate Capped Extended Broad Bond Index – High-Yield	EMBBICCE_HY
US Inflation-Linked Securities Index 10 yr+	ILSI_US_10+
FTSE World Broad Investment-Grade Bond Index (WorldBIG®)	WBIG
FTSE US Broad Investment-Grade Bond Index (USBIG®)	BIG
FTSE Euro Broad Investment-Grade Bond Index (EuroBIG®)	EBIG
FTSE World High-Yield Bond Index	WHYM
Russell 1000 Index	R1000
Russell 2000 Index	R2000
FTSE Global All Cap Index	GEISLMS
FTSE All-World Growth Index	AWORLDSG
FTSE All-World Value Index	AWORLDSV
Russell 1000 Growth Index	R1000G
Russell 1000 Value Index	R1000V
FTSE USA Index	WIUSA
FTSE UK Index	WIGBR
FTSE Developed Europe ex UK Index	AWDEXUKS
FTSE Japan Index	WIJPN
FTSE Developed Asia Pacific ex Japan Index	AWDPACXJ
FTSE China Index	WICHN
FTSE Emerging Index	AWALLE
FTSE All-World Index	AWORLDS
FTSE Global Core Infrastructure Index	FGCII
FTSE EPRA Nareit Global Index	ENHG
FTSE Europe Ex UK Index	AWEXUKS
FTSE Asia Pacific Ex Japan Index	AWPACXJA
FTSE USA All Cap Index	LMSUSA
FTSE Developed Index	AWD
FTSE All-World Ex US Index	AWXUSAS
FTSE Global Large Cap Index	GEISLC
FTSE Global Small Cap Index	GEISSC
FTSE Developed Large Cap Index	LCD
FTSE Developed Small Cap Index	SCD
FTSE Developed Growth Index	DGWLD
FTSE Developed Value Index	DVWLD
Refinitiv Commodity Index	RTCI
Refinitiv Core/Commodity CRB® Index Total Return	TRCCRBTR

Appendix 2: Methodology Reference Guide

Report calculations

- Unless noted otherwise, all performance calculations are in US dollar.
- Methodology for calculation of Upgrade-Downgrade ratio in credit markets: Fallen angels, corporate bonds downgraded from IG − a minimum rating of BBB- with S&P, Moody's or Fitch - to a HY credit rating of BB+ or below, are not included in the calculation of downgrade ratio, as they were not included in the high yield index.
- All credit spreads are with reference to the US 7-10 year Treasury bond index.
- Risk premium in equity is calculated as the earnings yield (E/P) of the All-World Developed index minus the yield of US Treasury 7-10 years. Risk premiums in high yield are their credit spreads relative to yield of US Treasury 7-10 years.
- Correlation matrix among asset classes is calculated using monthly returns over the time frame of analysis mentioned in the chart heading.
- Earnings yield is calculated as the inverse of PE ratios for the indices in these four asset classes - equity, fixed income, listed real estate, listed infrastructure.
- In currencies, Euro and GBP are quoted as number of US dollars per unit of foreign currency. Yen and CAD are quoted as number of units of foreign currency per unit of US dollar.
- Currency exporters and importers classification is based on the commodity exposure in the macroeconomy of the country.
- Fund flow to geographic markets based on domicile of fund as defined by Lipper. Rebased cumulative fund flow commencing at the beginning of the 12 month period (sign inverted in rebasing if initial month flow is negative). Rebasing figure is sensitive to the first month's flow. Figures subject to revision.
- Page 15 uses the Refinitiv/CC CRB Total Return index (US $). Page 9 used the RFV Commodities Price index. The return for commodities is very dependent on the index used, given the huge return dispersion among different commodities and their differing weights in the indices
- For sector fund flow data, the data used are the monthly equity fund flows in US domiciled equity sector funds, as defined by Lipper Global Fund Classification.
- For sustainable investment flows, the data used is the SI flows using the Lipper ethical restriction, a broader definition than the Responsible Investment definition used by Lipper.

Source: FTSE Russell/Refinitv. Please see the end for important legal disclosures.

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