FTSE RUSSELL
An LSEG Business

Asset Allocation Insights

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

Fed pivot and disinflation lift markets but higher dispersion of returns may continue. Central bank caution, recession & valuation risks remain.

The Fed's December pivot (pauses by ECB & BoE) sustained the Q4 market rally, reducing duration risk. Global macro divergences, and changing correlations across asset classes strengthen the case for diversification. Previous cycles and lags from the impact of higher rates imply recession risk remain, with valuations extended in high yield and US equities.

Highlights

Disinflation and Fed pivot provides tailwinds

Inflation has fallen enough for central banks to indicate a pause, with expectations for rate cuts in 2024. Growth is slowing sharply but could be supported in the medium term by increased investments from US fiscal policies, reshoring and AI-led productivity growth. Capital flows in November showed a change from the YTD trend, with money flowing back to equities, US and credit.

Dispersion is trending higher. Global ex-US equities doing well

Inflation is falling in North America and Europe, Japan has finally reached the inflation it wanted, and China is trying to ward off deflation. A mixed inflation and resulting rates picture is leading to higher dispersion in global equites. US equities have outperformed YTD but Dev. Europe ex UK has led in the last three & 12M, while Japan had the highest return/risk over 12M. It is no longer only about US equities!

Duration gains appeal. Valuation favors Treasuries & Euro bonds

Rate pause and a potential peak in long bond yields indicate duration might more attractive today than in the last year. US IG corporates trade at historically tight spreads, while US Treasuries offer close to pre -GFC yields. European bonds have performed the best in both IG and HY in the last 3M, YTD & 12M (vs US & EM), and still have a more attractive valuation, yield/duration and better credit mix vs the US.

Recession & downside risks remain in the next 6-9 months

18-24 months post the start of rate hikes and 12-18M post yield curve inversions, historical trends show the US and global economy might be entering the slowest growth period. Risks include sharply lower (per high frequency data) US Q4 GDP estimates, slowing earnings growth forecasts, negative revisions, and valuation re-ratings that might have moved ahead of equity fundamentals, notably in the US.

Alternate asset classes remain attractive

Listed real estate performance has turned healthy in hard-hit Developed Europe & UK, and sector breadth has improved globally, indicating real estate might have bottomed. Listed real estate and infrastructure are providing healthy income yields of around 4%. Commodities performance relative to equities seem on an uptrend.

Diversification remains key

Differing return-risk of asset classes & correlations over the last 1Y & 3Y indicate constantly changing markets and a need to stay diversified.

Chart 1: Key long term sovereign yields indicate the economic cycle in Japan and China is desynchronized from most of G7.

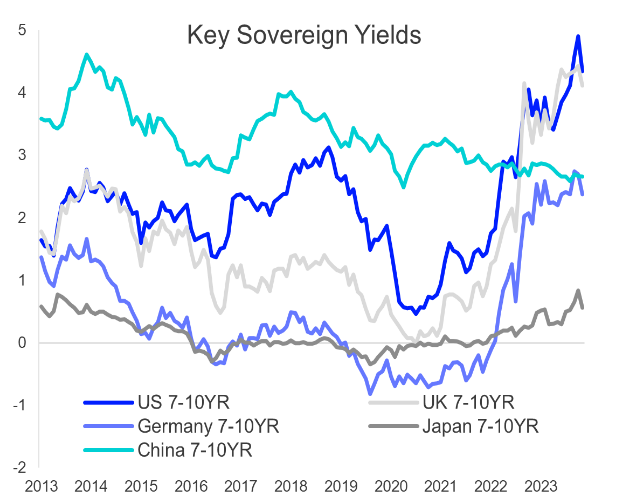
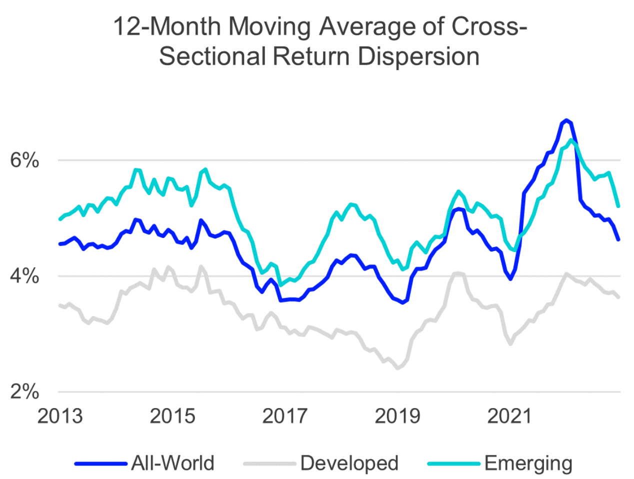


Chart 2: Post-Covid, cross-sectional dispersion within equity markets has increased in Developed and Emerging markets.



Receive this report:
Register to receive future editions of this report, and others in the Market Maps series here.

Source: FTSE Russell/Refinitiv. All data as of November 30, 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.

Financial Markets Overview

Clear disinflation and sharply slowing economic growth has the Fed (and many central banks) on pause, providing strong tailwinds to financial markets since November. The ‘pause before rate cuts’ has historically been a sweet spot for markets. While bond yields have fallen in the last month, they remain closer to the pre-GFC 3-6% levels and could lead to a better capital allocation relative to the low rate between the GFC to Covid era. Structural tailwinds could limit the severity and length of a potential economic slowdown in 2024 due to an AI-led productivity growth rebound, fiscal policy-led investments in the US, and Japan escaping its long deflation.

Medium term growth expectations and cross-asset comparisons (PMI, commodity prices, stock/bond valuations & risk premia) indicate a downside bias to rates and potential for credit spreads to widen, together leading to a potential peak in bond yields. This would argue for longer duration, both for total return and buy and hold investors. Recent improvements in credit quality composition, and a potential bond yield peak before the expected refinancing wall in 2025, imply defaults could be lower than in previous stress periods.

Valuation, risk-return metrics & relative credit quality mix of the fixed income indices, all favor Euro bonds and indicate their recent out-performance could continue. A downward bias to the US dollar as the Fed pauses would further help Euro bond returns in US dollar.

An end, or pause, to rate rises have led to a strong YTD rally in global equities, and Growth outperforming Value (in turn supporting the Technology & Growth heavy US equities). The GFC-Covid era had US equities consistently outperforming other markets, but recent 3M, YTD & 12M equity returns show strong performance also by developed Europe ex UK and Japan. Levels, and expected path of growth and inflation, show some clear dispersion across regions, which alongside unique structural changes in many countries (fiscal-led investments in the US, labor market and corporate governance reforms in Japan, pivot from real estate & investment-led growth in China), all point to dispersion in financial markets potentially remaining a key theme in the medium term.

Rate pauses, even potential rate cuts in 2024 (the latest Fed Dot plot show a median of 75bs easing, while markets expects ~100bps cuts by the Fed and even more by the ECB) are strong tailwinds for equities in the next 6-12 months. Correlation numbers show that US equities are driven as strongly by global rates as by US rates, so maybe it shouldn’t be just ‘all eyes on the Fed’ for US investors. However, slowing earnings growth forecasts, negative revisions, and a valuation re-rating that might have moved ahead of improvement in equity fundamentals indicate correction risks for equities remain in place, particularly after the December rally.

Fund flows in November show investor beliefs changing to a more risk-on rally mode – money flowed back to equities and US markets, though money market flows still remain strong.

Prices of growth commodities have fallen with slowing macro growth, but they (particularly oil) remain higher than pre Covid levels. Relative currency returns of commodity exporters vs importers indicate optimism for commodities. Commodities relative performance to equities tends to follow long cycles, and this metric indicates that there could be several years of this asset class having healthy risk premium versus equities. Commodities have been a strong diversifier to equities, arguing for their role in a well-diversified portfolio.

REITs (usually a leading indicator to real estate) had positive returns in the last 3M in the All-World, US, Japanese, UK & European equities (especially strong in the UK & Europe – markets hardest hit during 2022 high inflation), and a fairly broad sector performance might indicate real estate have turned the corner from post-Covid & rate hike led lows. Data Centers have outperformed.

Equities, historically, had the highest returns and would appeal to total-return investors. Developed Europe and EM equities (high dividend yield) could appeal to income-oriented equity investors – an important market segment in an aging world. US equities may well reap the benefits of a technologically innovative US leading the AI boom. Local bond vs equity metrics make Japanese equities attractive with local investors, important given the well-documented home bias in investing. Listed real estate, infrastructure and fixed income provide healthy income yields of 3.5-4.4%, while fixed income has traditionally been a ‘volatility dampener’ (rising rates in 2022-23 reduced the extent to which FI had lower volatility compared to other asset classes, but a rate pause could reverse that).

Still high (rolling 12M) stock-bond correlations could continue to fall as rate hikes pause. The importance of diversification continues as the risks & returns of asset classes vary over time, and dispersion in financial markets increase. Falling EM-DM equity correlations are driven by the divergent US-China economic paths, though that may have bottomed in 2022. Consistently high correlations between equities & high yield credit show that stock/bond diversification benefits come from investment grade only. For equity investors, commodities provided significant diversification, and listed infrastructure provides more diversification than listed real estate.

Table of contents

Source: FTSE Russell/Refinitiv. All data as of November 30, 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.

Macroeconomic Backdrop

Slower growth, closer to normalized inflation and pre-GFC like rates point to a Goldilocks scenario. Dispersion in the macro picture of major economies is a key story.

Coordinated central bank tightening since early 2022, fully normalized supply chains and lower commodity prices, have led to disinflation (Charts 3 & 5). Inflation expectations, both consensus and breakevens, have declined globally and are expected to be just above central bank targets by 2025. Meanwhile, Japan seems to be finally getting the inflation it has wanted for years. The inflation story looks promising to markets.

US manufacturing PMI and new orders have contracted (Chart 1), a trend also seen in other large economies, while the services PMI remains expansionary, albeit at a slower rate. These support the slow but non-recessionary 2024 growth estimates (Chart 2). Dispersion is visible in the trend for 2024 growth estimates – improving for North America and declining elsewhere. Financial conditions remain fairly easy, despite sharp central bank rate hikes in the past 18 months (Chart 4). Lower inflation, a possible peak in global rates and relatively easy financial conditions have continued to support financial markets.

Chart 1: In the last 3M, new manufacturing orders contracted further & services continue to expand, though at a slower pace.

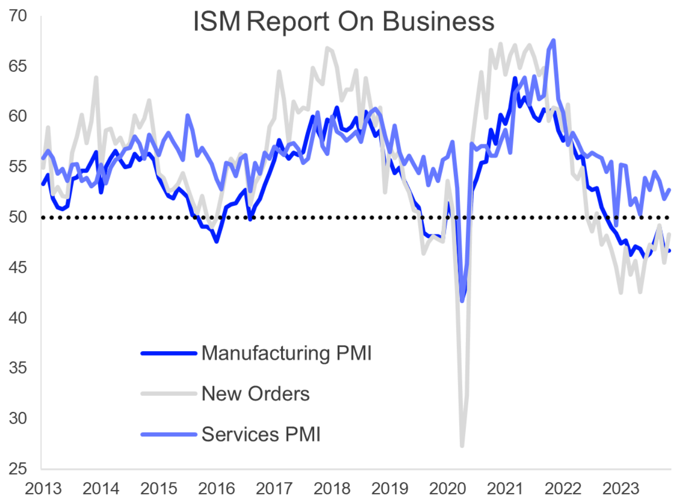


Chart 2: Dispersion in growth – the IMF upgraded the 2024 Canada & US growth estimates, downgraded Euro area, UK, China & EM.

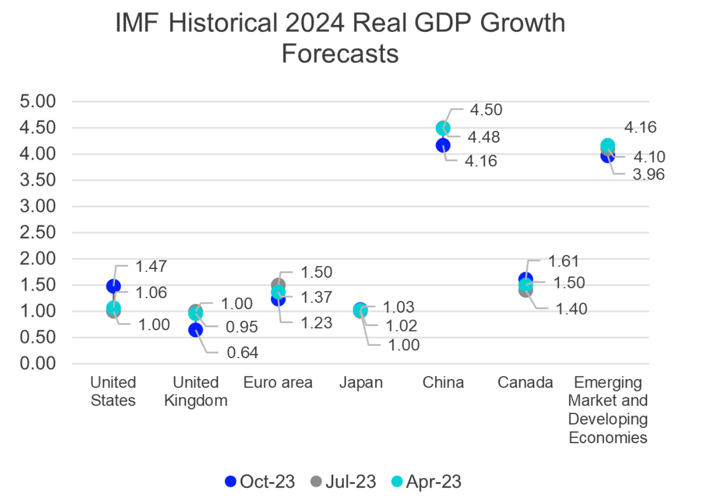


Chart 3: Inflation in the US, EU & UK is expected to be just >2% target by 2025. Japan's inflation was above 2% target for 18M.

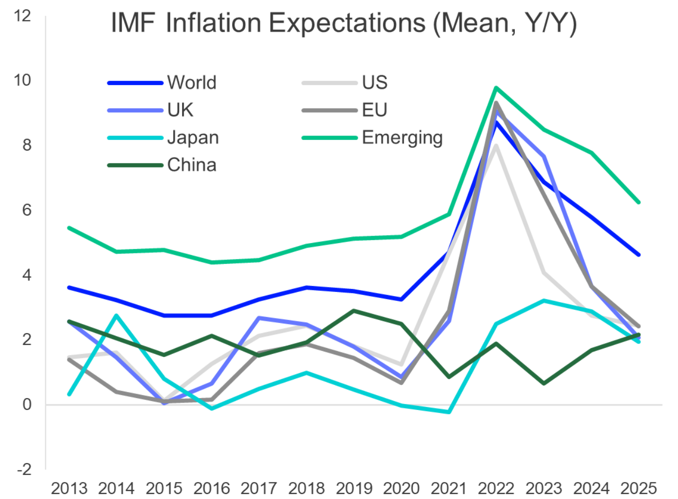


Chart 4: US financial conditions are at pre-Covid levels & at the start of current rate tightening cycle, despite rate rises of 525bps.

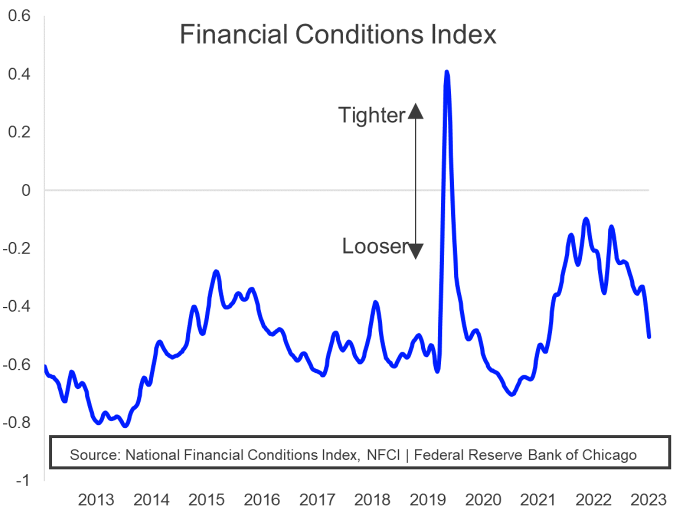


Chart 5: Global supply chain pressure (a key driver of inflation spike in 2022) has fully normalized.

Source: FTSE Russell/Refinitiv. All data as of November 30, 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.

Macroeconomic Backdrop (Continued)

Slowing economic growth indicates that rates have further room to fall, while credit spreads could increase. Short term correction remains possible for risk assets, like high yield credit and equities.

The Copper/Gold ratio and oil prices usually have a positive correlation with sovereign bond yields. Charts 2 & 3 show that even after the November and early-December decline, rates probably still have further room to fall. Credit spreads, meanwhile, are much tighter than economic conditions might warrant (Chart 5). The long-run relationship between economic growth and equities (Chart 1), and the typically strong correlation between small cap equity volatility and US high yield credit spreads (Chart 4), both indicate downside risk in equities. Together, they indicate short-term risks in high yield and equities, even though a structural uplift to growth from AI and a manufacturing boom (due to the Infrastructure Bill, CHIPS & Science Act & Inflation Reduction Act) could support higher growth and risk-asset returns over a longer horizon.

Chart 1: The historic relationship between PMI and equity returns points toward potential correction risk in equities.

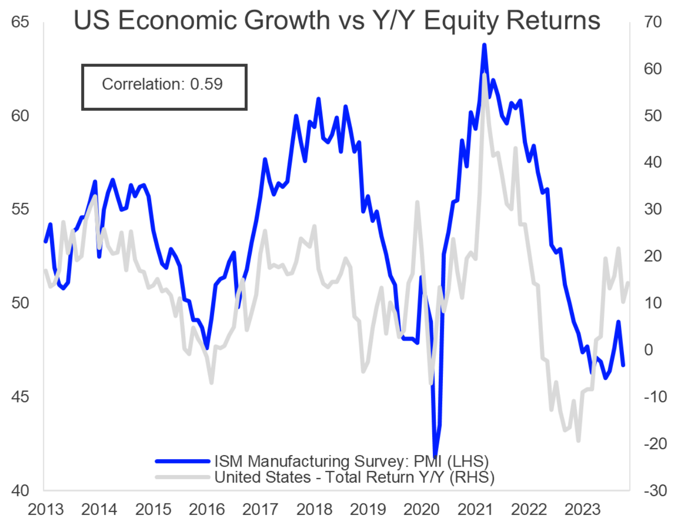


Chart 2: Sovereign yields rose sharply in Sept-Oct, and even after the recent fall, seem higher than growth expectations might imply.

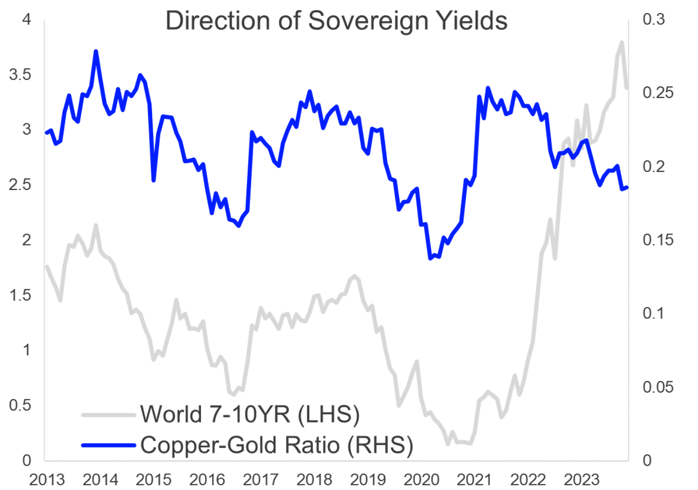


Chart 3: Recent decrease in oil prices imply sovereign rates may have further room to fall due to slowing growth.

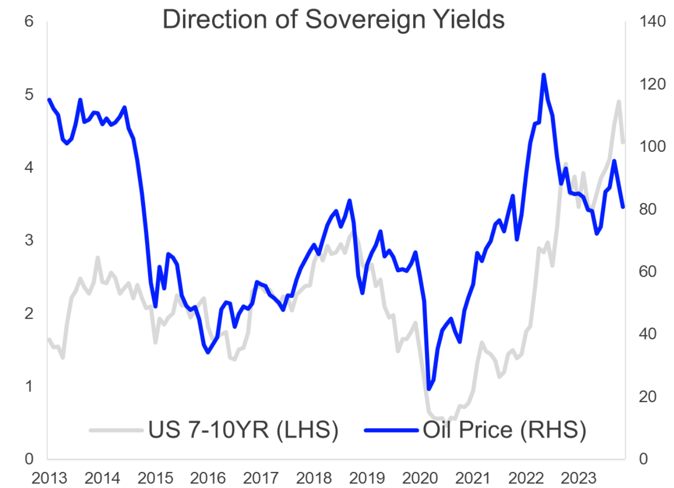


Chart 4: Equity risk (volatility) has fallen even more than HY risk (spreads). Risk assets are pricing in benign conditions.

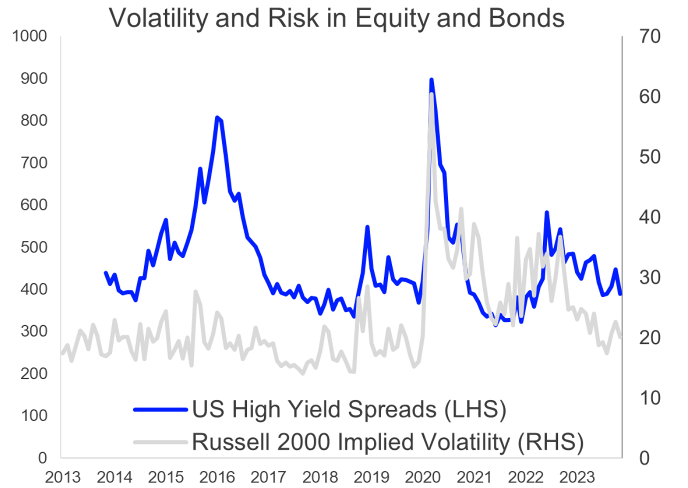
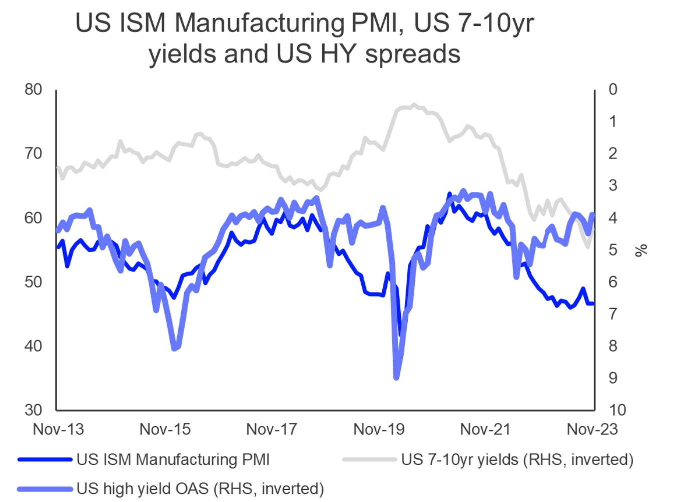


Chart 5: US economic growth expectations argue for significantly higher HY credit spreads (~200 bps higher).



Source: FTSE Russell/Refinitiv. All data as of November 30, 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.

Sovereign Yield Curves

Sharply slowing economic data, alongside the usual timeframe for a full impact of monetary tightening and post yield curve dis-inversion, indicate 4Q 23 and 1H 24 may be the trough in this cycle. The rates picture could provide tailwinds for financial markets, though dispersion across countries argues for selectivity.

The Atlanta Fed GDPNow (on Dec 7) tracks 1.2% growth for 4Q 23, sharply lower than the 5.2% estimated for 3Q 23 in the US. Given the usual peak impact of monetary policy is after 18-24 months, and historical evidence that a recession usually happens after the inverted yield curve shows signs of dis-inversion, 4Q 23 – mid 2024 could see the slowest growth in this post-Covid cycle.

However, more important than slowing growth is the expected pause for most central banks (Chart 4 shows expected Fed rate cuts in 2024), which is historically positive for risk assets. The term premium and CME futures indicate (Charts 5 & 6) long yields may have peaked, and also provide tailwinds for markets. An increase in the upper & lower end bands around the still 2.5% median long-run fed funds rate since last year (Fed data) indicates an upward bias towards rates remaining in a pre-GFC normal that could potentially lead to a more efficient capital allocation and productivity growth. The dispersion in rate trends, and whether the driver is real or nominal rates in last 3M (Chart 3), indicate the potential for continued dispersion in financial assets, and opportunities for selectivity. The expected rate path amid slowing growth argues for locking into current high rates for buy and hold investors.

Chart 1: Key yield curves stay inverted, but recent dis-inversion shows a cycle trough may be close.

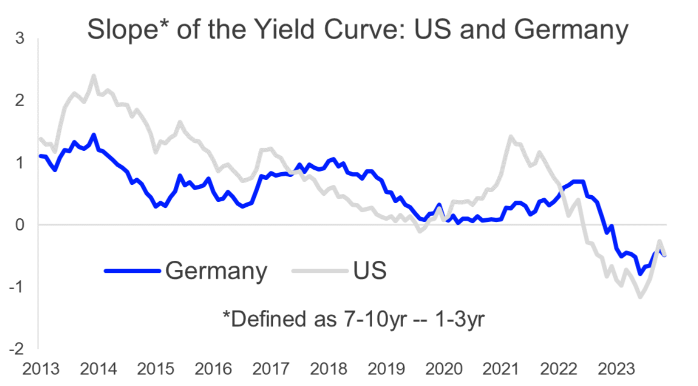


Chart 2: US rates have increased at the long end in the last 3M, mainly due to falling inflation expectations and rising real rates.

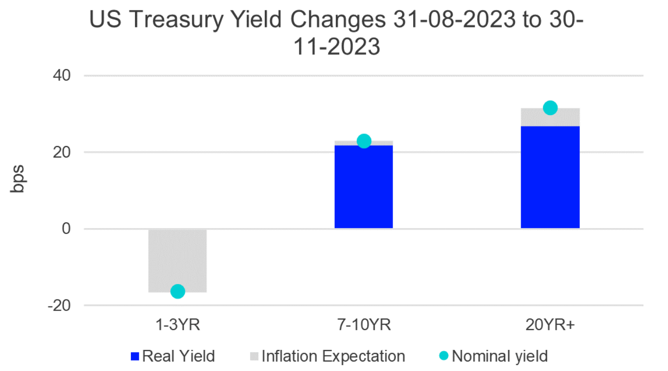


Chart 3: 3M changes in long rates (+ or -) & their drivers (real yield or inflation expectations) showed dispersion across key countries.

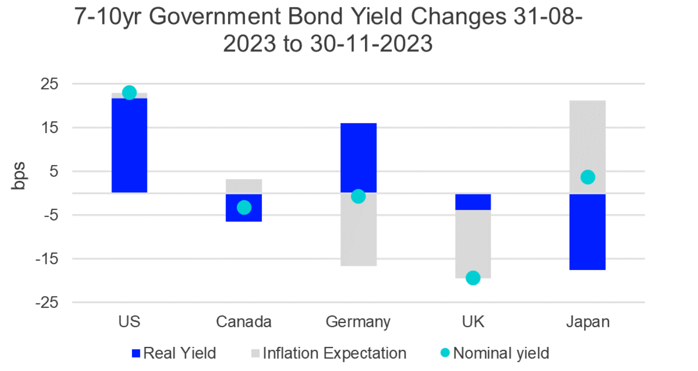


Chart 4: The Fed Dot plot (as of Dec 13) indicates rate cuts in 2024. The Fed expects three, while markets expect four cuts.

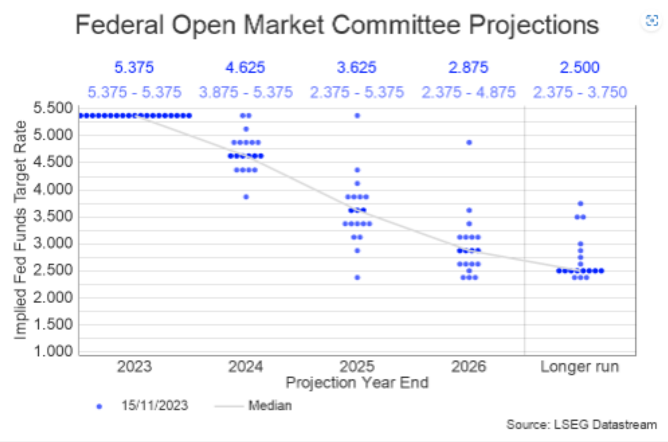


Chart 5: The US 10-year term premium seems to have peaked – a sign that long rates may be at a cycle high at current ~4.2%.

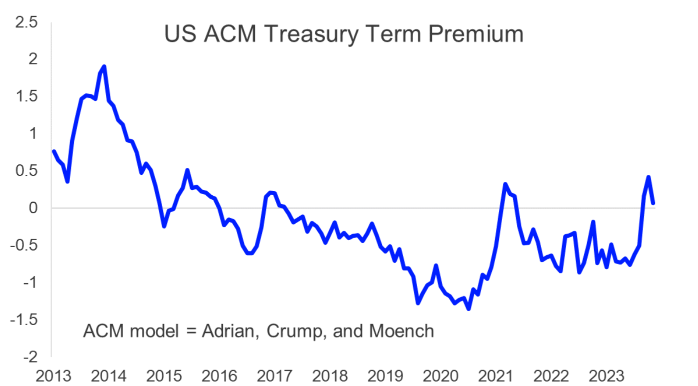
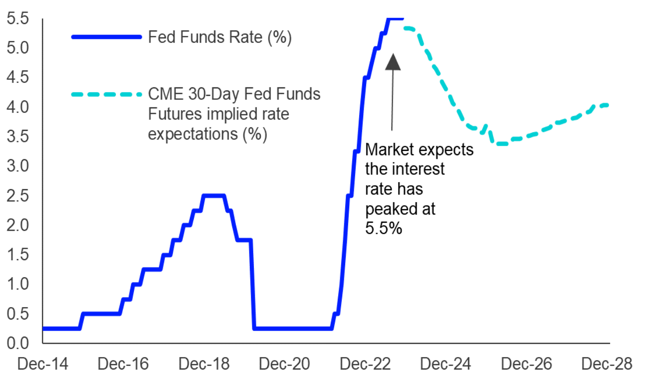


Chart 6: Market expectations: US policy rates may have peaked at 5.5% in mid 2023 and easing of~100bps is possible in 2024.



Source: FTSE Russell/Refinitiv. All data as of November 30, 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.

Credit

Credit markets have continued performing well through the rising rates and volatile markets in 2023, with European bonds being the clear winner. Credit composition has also improved.

Consistent credit spread tightening (last 3M, YTD & last 12M) combined with recent flat to declining rates, have led to positive credit returns in IG and HY, and across US, Europe and EM in the last 3M, YTD and 12M. European bonds outperformed their US and EM counterparts in both IG and HY, consistently across 3M, YTD and 12M, also boosted by the stronger Euro.

Credit composition in the HY index (share of highest rated BB) is better in Europe than in the US, and the credit mix in both US & Europe has improved since April 2023 (rising share of BB), reversing the deterioration seen in last few years (Chart 1). The credit quality of the US IG index has also improved YTD (40.2% in A & 51.7% in BBB rating in November vs 38.6% & 53.2% respectively end-2022). Euro IG credit quality improved more than US IG, YTD. NY Fed's Corporate Bond Market Distress Index (CMDI) indicates corporate bond markets remain healthy and below the 40th percentile. High Yield CDMI is at its lowest since December 2022.

Chart 1: The credit profile of (US & Euro) HY Indices has improved recently, but remains better in Europe.

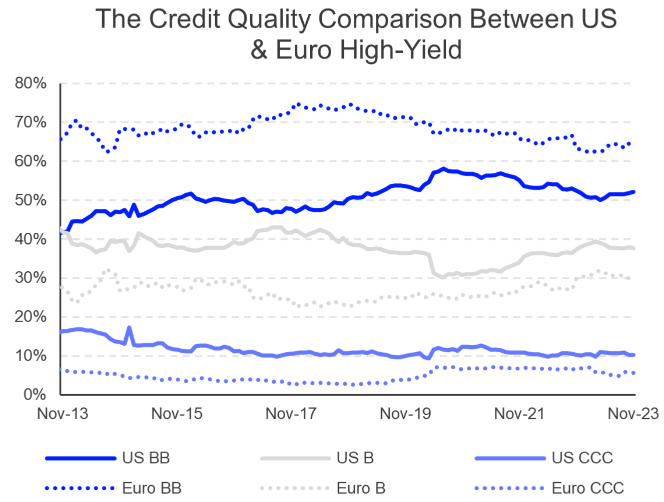


Chart 2: Consistent spread narrowing since market troughs in late 2022 – across IG & HY, and across US, Euro & EM.

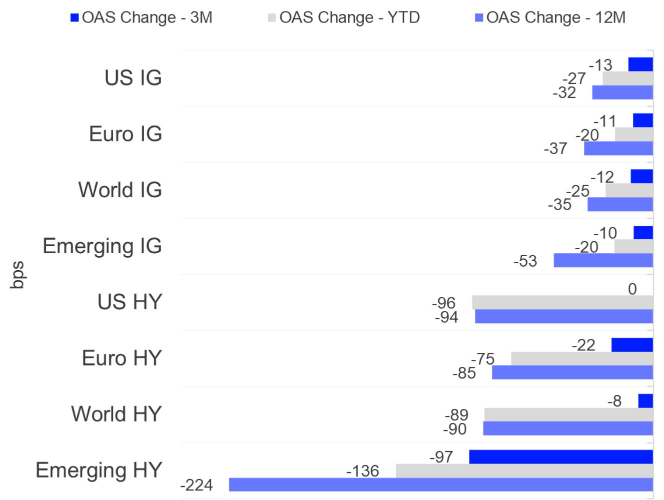


Chart 3: Credit returns have been positive in the last 3M, YTD and 12M. Europe consistently outperformed US and EM.

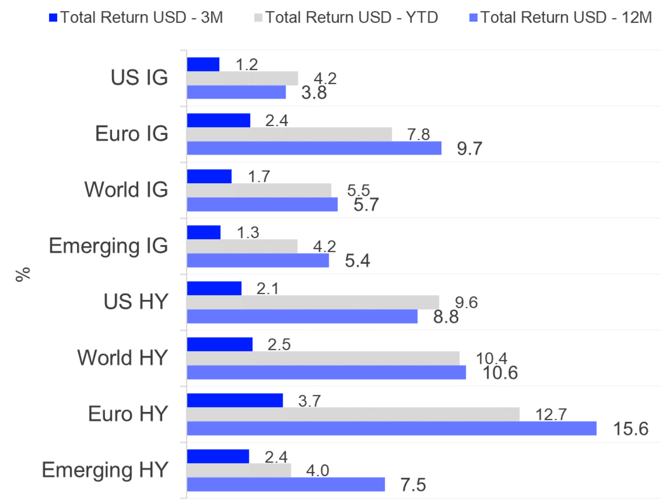


Chart 4: IG corporate spreads have tightened significantly YTD. Spreads in Europe > US by 28bps & EM > Europe by 13bps only.

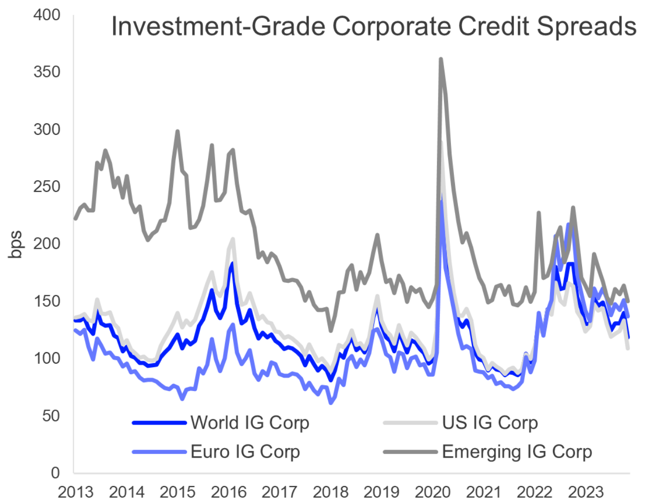
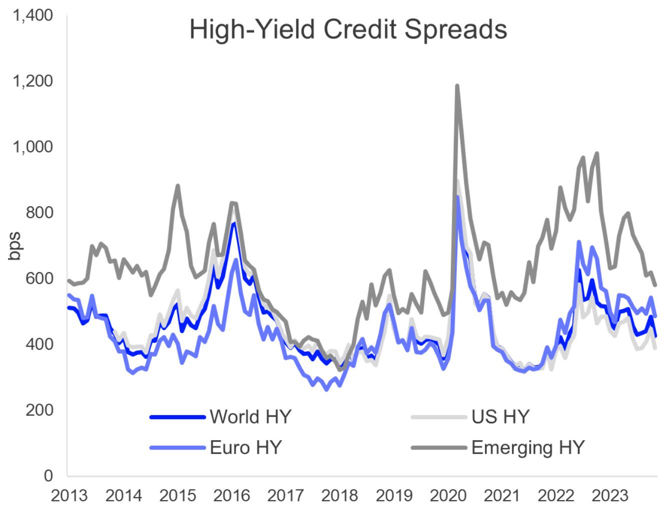


Chart 5: HY spreads globally have narrowed significantly YTD. The additional spread in Euro vs US & EM vs Euro is ~95 bps.



Source: FTSE Russell/Refinitiv. All data as of November 30, 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.

Credit (Continued)

Valuation metrics argue in favor of Euro bonds, US Treasuries, and Investment Grade, in place of High Yield.

Valuation spread percentiles indicate Euro bonds have the lowest valuation in both IG & HY (Chart 2). Duration risk-adjusted yields are higher for Euro and EM bonds than for US bonds (Chart 3), and including credit risk, Euro bonds currently offer highest risk-adjusted returns. Historically, cheaper valuations led to better returns (Chart 1). These could also imply more opportunities in European bonds, and a reason for their recent outperformance (Page 6, Chart 3).

The upgrade-downgrade ratio and US liquidity conditions (proxied by bank lending standards) have improved, though US HY spreads remain tighter than liquidity conditions imply (Charts 5 & 6). 12-month default risk (CDS implied probability) has fallen to 2.4% (was 5.3% in January 2023). However, US HY spreads being in quintile 2 of their more than 20-year history portends potentially to lower future returns (Chart 1), in spite of fairly healthy upgrade-downgrade and default metrics. In the US, overall IG spreads are at 52nd percentile, while IG corporates and HY spreads are tighter than 30th percentile, indicating US Treasuries remain cheaper than both their IG & HY corporates. IG has a lower valuation than HY in Europe, while EM IG bonds are particularly expensive (Chart 2).

Chart 1: US HY 1Y forward return by spread quintiles (since 2001) indicate lower valuation led to higher returns.

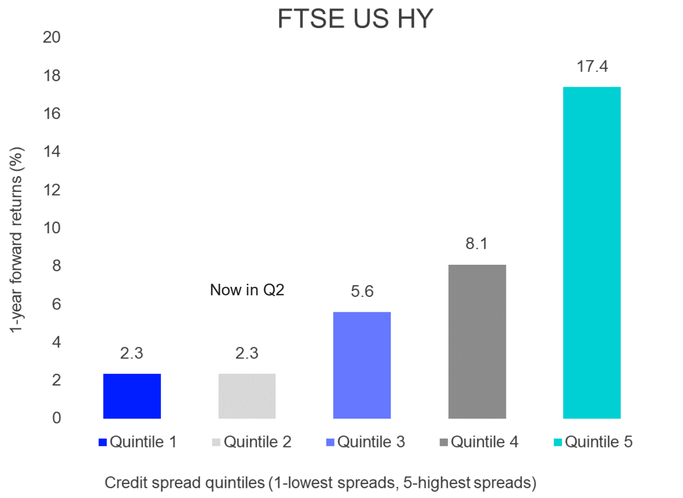


Chart 2: Euro corporate bonds have the most attractive valuations in both IG & HY. US bonds & EM IG corporates are richly priced.

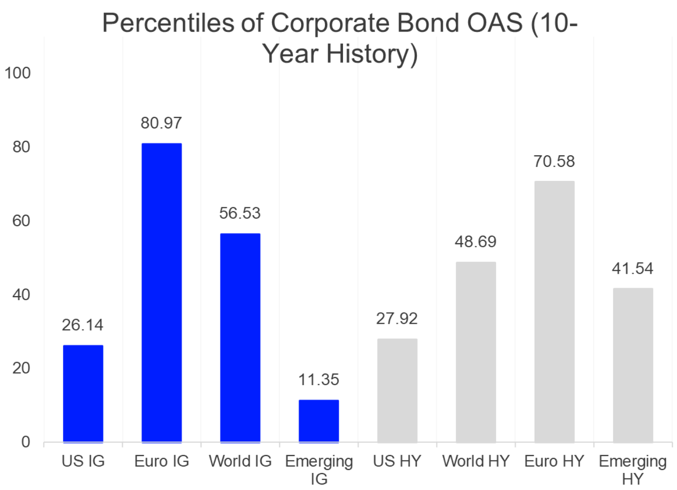


Chart 3: Return per unit of duration risk is highest in emerging markets (for both IG & HY) & higher in Europe than in the US.

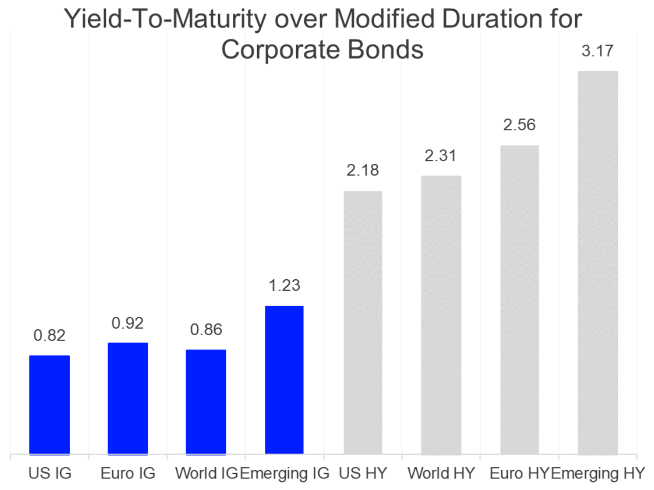


Chart 4: Upgrade-downgrade ratio has improved YTD.

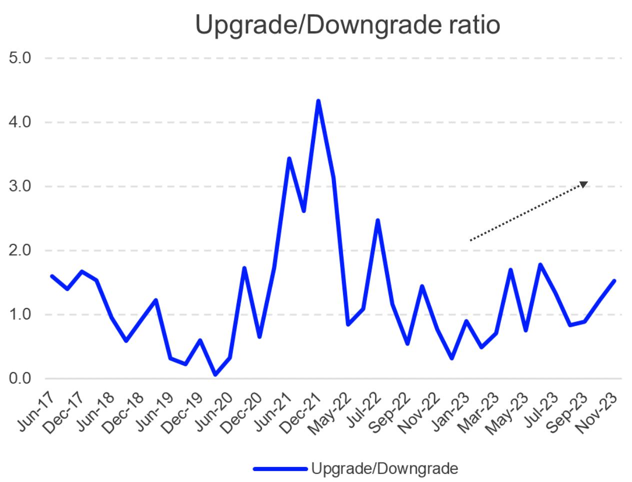
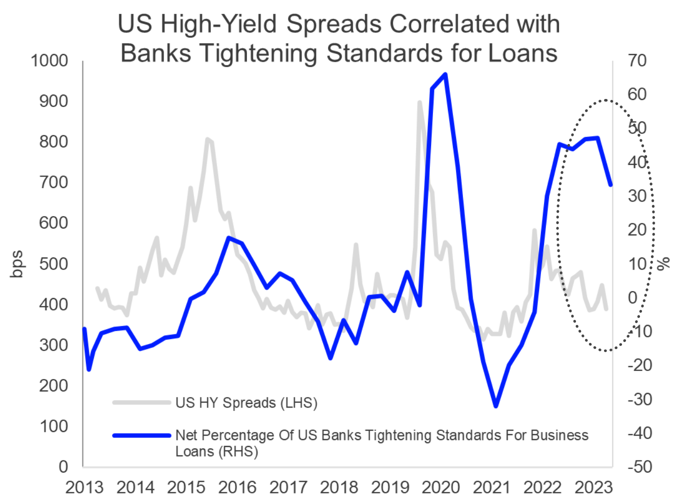


Chart 5: US lending conditions have eased recently, but US HY credit spreads remain far lower than liquidity would argue for.



Source: FTSE Russell/Refinitiv. All data as of November 30, 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.

Equities

Policy rates pause, plateauing of long yields and structural drivers led to strong equity performance YTD.

Falling rates and the promise of AI led to a strong growth rally YTD (Chart 3), with the tech-heavy US equities performing best YTD. Increased US corporate investments post fiscal measures (Infrastructure Act, Inflation Reduction Act, CHIPS Act) helped US equities. Developed Europe ex UK had the highest return in the last 3M & 12M (marginally higher than US over 3M), and in-line with the All-World YTD: its higher industry diversification (Page 9, Chart 2) & highest dividend yield (Page 15, Chart 2) holds appeal for aging investors looking for a steady income. Japan, with its structural reforms in the last decade, has made a strong comeback with the last 12M returns exceeding the All-World.

Realized volatility increased globally in 2023, though Japan had the lowest (Chart 2). Combined with its high return in the last 12M, it indicates Japanese equities have an attractive return/risk.

EM significantly lagged the All-World and DM, driven mainly by poor performance in China, but had (surprisingly) low volatility. Large caps continued their edge over small caps YTD, particularly in DM (Chart 5), as access to liquidity remained important. Dynamic (cyclical) industries have been doing better than defensives YTD (Chart 3), though more modestly than the huge outperformance of Growth over Value.

Chart 1: The best performing market in the last 3M & 12M was Developed Europe ex UK and the US on a YTD basis.

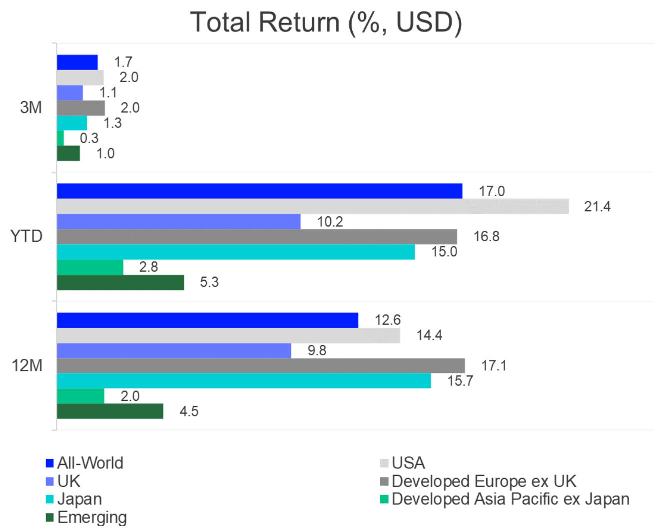


Chart 2: Volatility rose in 2023 across markets. It is lowest in Japan, followed by EM & highest in Developed APAC ex Japan.

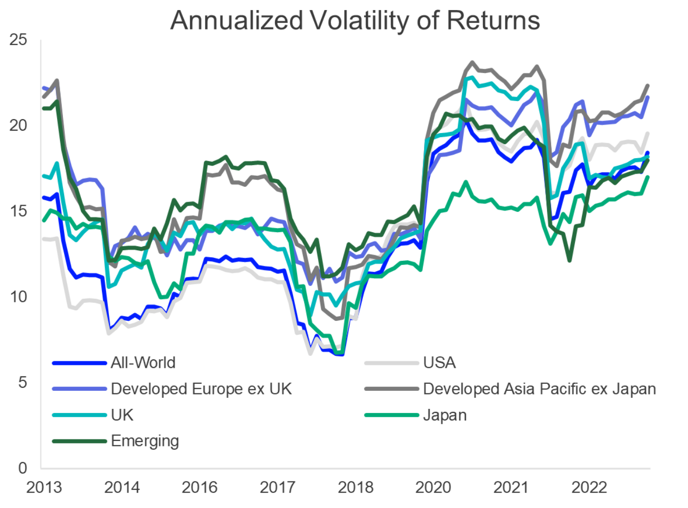


Chart 3: YTD, Growth has clearly outperformed Value, while Cyclical industries have outperformed Defensives marginally.

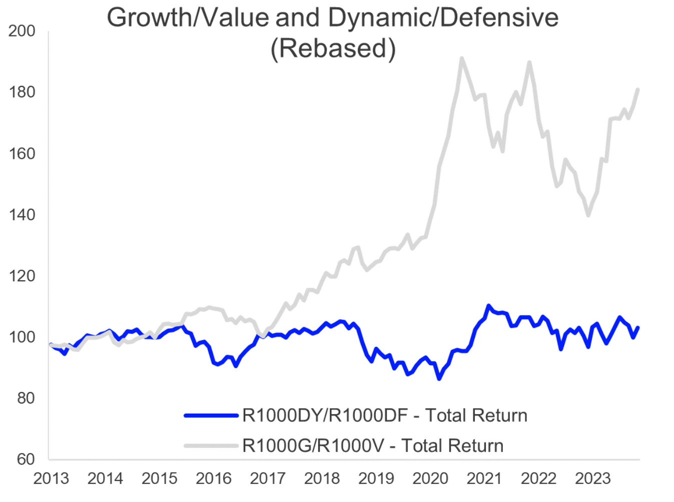


Chart 4: Developed markets continue their long term trend of outperforming emerging markets.

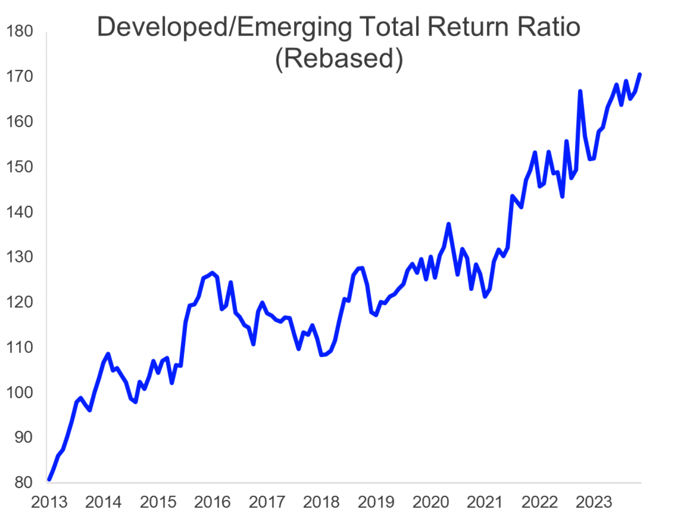
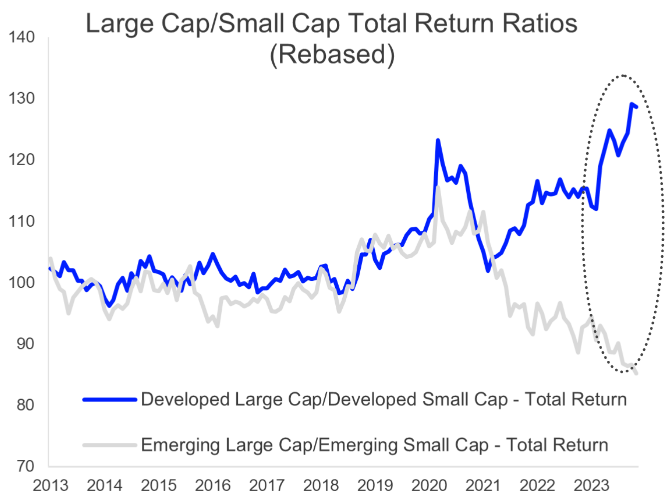


Chart 5: The rotation into large caps, especially after the US banking crisis in March, happened only in developed markets.



Source: FTSE Russell/Refinitiv. All data as of November 30, 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.

Equities (continued)

Slowing earnings growth but valuation expansion underpins the equity rally YTD, with the valuation expansion being particularly strong for the US and Growth. The equity rally has broadened through the year.

Slowing economic growth is translating to slowing earnings growth. The two years expected earnings growth is now at 3.1% in the US, 6.1% for DM & 13.3% for EM (Chart 3). Earnings revisions are also negative, and more so for small caps (Chart 4). The US had a valuation expansion compared to the rest of the world YTD, with the ratio of US to All-World ex US PE now at 1.8x (vs 1.4x end 2022). Within the US, the Russell 1000 Growth PE is now 1.8x vs the Russell 1000 Value PE. Underpinning the high US valuation is its concentration in Technology (33% weight in FTSE USA). Technology is the industry with the highest valuation in the All-World (Forward PE of 24.7 vs the lowest valued Energy at 9.4 & Financials at 10.0). In terms of its historic valuations, the US is at its 10Y average, while other markets, notably the UK & Europe, are below their LT averages (Charts 5 & 6). While the AI revolution could help the US the most, its lower earnings growth and high valuation premium leave it with higher downside risk. Japan & Europe are more diversified across industries. EM valuations vs DM have contracted in 2023, from 0.8x at the start to 0.6x (end of November).

On the positive side, the equity rally has broadened throughout 2023. The spread between the 3M return of the best & worst-performing industries in the All-World index was 7.3% at the end-November (Chart 1), vs 13.4% (end-August) and 28.3% (end-May).

Chart 1: Tech & Financials gained most in the All-World in the last 3M. Dispersion in industry returns was highest in the UK.

3M Regional Industry Returns (TR, USD)

	All-World	US	UK	Dev Eur ex UK	Japan	Dev AP ex JP	Emerging
Index Return	1.7	2.0	1.1	2.0	1.3	0.3	1.0
Basic Materials	1.1	-0.2	4.9	2.4	3.9	1.0	0.8
Consumer Disc.	0.2	1.2	1.7	-1.5	1.7	-2.2	-6.8
Consumer Staples	-2.3	-1.7	-5.4	-3.3	-1.5	-4.7	-0.2
Energy	-0.9	-4.7	4.5	7.4	8.6	-7.6	4.1
Financials	4.4	5.7	2.2	6.5	7.8	0.7	1.7
Health Care	-1.7	-1.5	-2.8	-3.6	-3.5	2.0	5.6
Industrials	0.2	0.2	2.0	3.2	-1.9	-5.2	-1.0
Real Estate	0.9	1.4	6.7	9.3	1.0	-4.2	-1.4
Technology	5.0	5.0	17.4	7.6	4.7	4.6	3.5
Telecoms	2.4	-0.9	3.3	4.3	1.8	10.4	3.3
Utilities	2.3	1.6	7.8	3.1	-0.5	-0.6	4.2

Chart 2: Industry weights led to different macro sensitivities: The US is concentrated; Europe, Japan & EM are more diversified.

Regional Industry Exposures (%)

	All-World	US	UK	Dev Eur ex UK	Japan	Dev AP ex JP	Emerging
Basic Materials	3.7	1.8	8.1	4.6	5.2	12.4	6.7
Consumer Disc.	13.9	14.2	11.2	13.2	23.1	8.7	12.2
Consumer Staples	5.9	5.0	16.0	8.5	6.3	3.5	6.3
Energy	4.8	4.1	13.0	4.3	0.8	3.4	6.5
Financials	14.2	10.2	17.8	17.8	11.7	27.1	22.6
Health Care	11.0	12.2	12.6	16.0	7.9	6.1	3.9
Industrials	12.9	11.7	13.6	17.6	24.5	11.3	8.1
Real Estate	2.4	2.4	1.3	1.0	3.6	6.7	2.3
Technology	25.2	33.5	0.9	9.7	11.4	5.7	23.8
Telecoms	3.0	2.3	1.3	3.1	4.0	12.3	4.1
Utilities	2.9	2.6	4.2	4.1	1.4	2.8	3.5

Chart 3: Earnings growth forecasts (%) have deteriorated the most in the US, with marginal declines in EM & other DM.

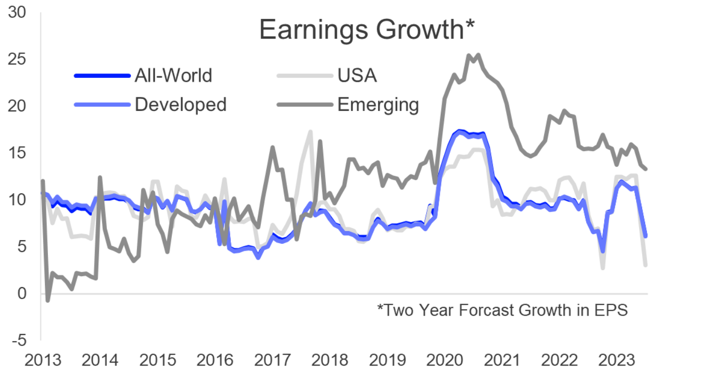


Chart 4: US earnings revisions (12M forward EPS estimates) remain negative, though the worst may be over.

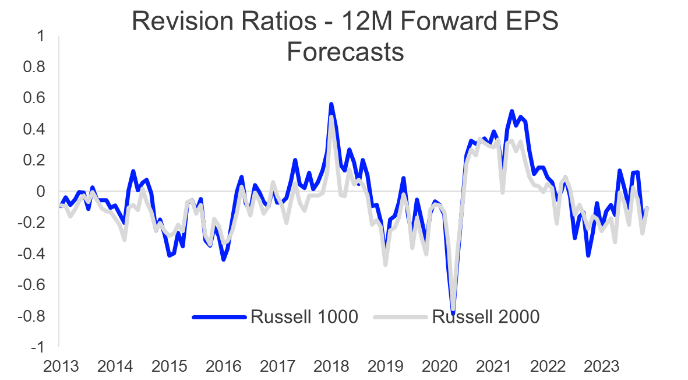


Chart 5: In 2023, US valuations rebounded much more than developed peers. EM valuation discount to DM has increased.

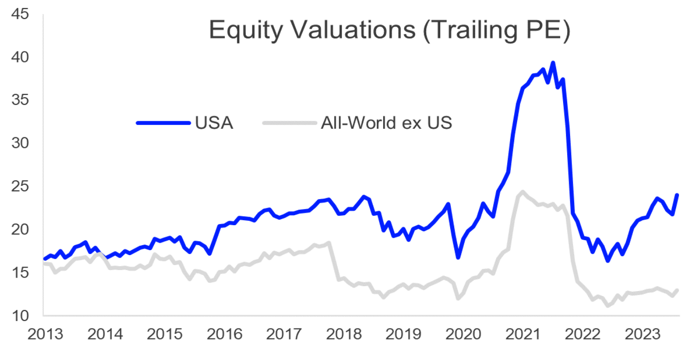
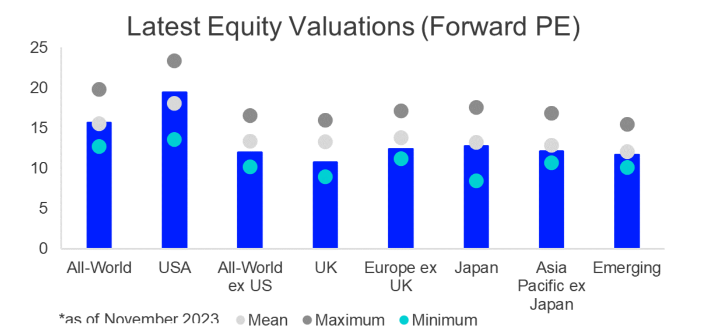


Chart 6: US valuations are the highest & at their 10Y mean. Other regions trade at a discount to LT mean (notably Europe & the UK).



Source: FTSE Russell/Refinitiv. All data as of November 30, 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.

Commodities

Commodities might have entered a long run uptrend relative to equities. Futures and currency markets indicate market expectation of commodities doing relatively well, despite slowing economic growth.

Commodity prices with a positive beta to global growth (oil & copper) have decreased with slowing economic growth. However, the level matters too. WTI futures are expecting oil to be ~$75/ barrel in late 2024 (vs pre-Covid ~$60/barrel). The last 3M data, driven by the November rally, shows currencies of commodity exporters (grey bars) had an average return of 0.3% vs USD, higher than commodity importers' -0.6% (blue bars): currency markets expect commodity prices to remain high (Chart 5).

Post Covid, commodities have outperformed equities. Trends in commodity vs equities has historically continued for up to a decade (Chart 4). The historically negative correlation between commodity prices & the US dollar has broken down since 2021 (Chart 3), possibly reflecting that a larger share of commodities is being traded in currencies other than the dollar. Gold prices have also been supported by the central banks' high gold purchases in 2022-23 (another sign of gradual de-dollarization?).

Chart 1: Oil futures curve indicate that markets expect crude at ~$75/ barrel in late 2024, still higher than pre-Covid prices.

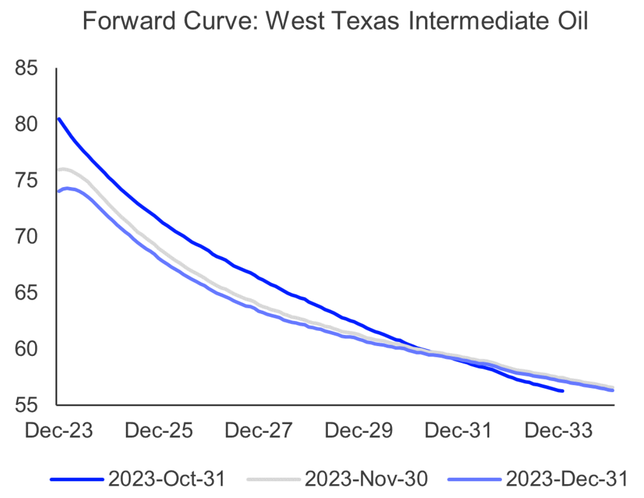


Chart 2: The Commodity Index has been close to flat in the last 3M, but risk-off metals outperformed growth commodities.

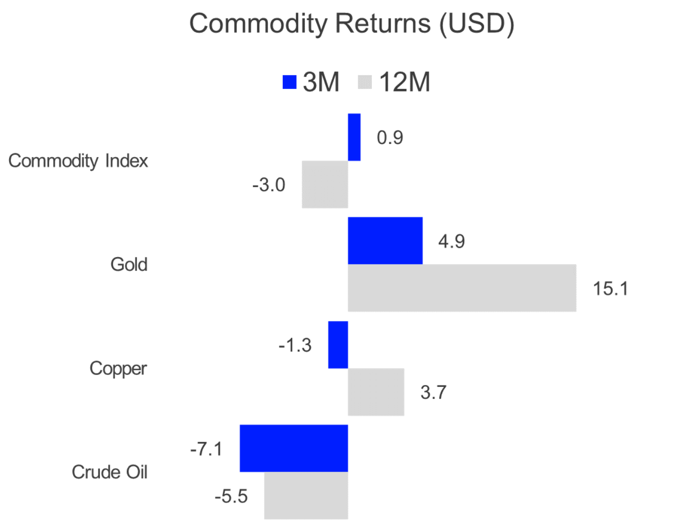


Chart 3: The typical negative correlation between commodities and the dollar has broken down since the Russian/Ukraine war.

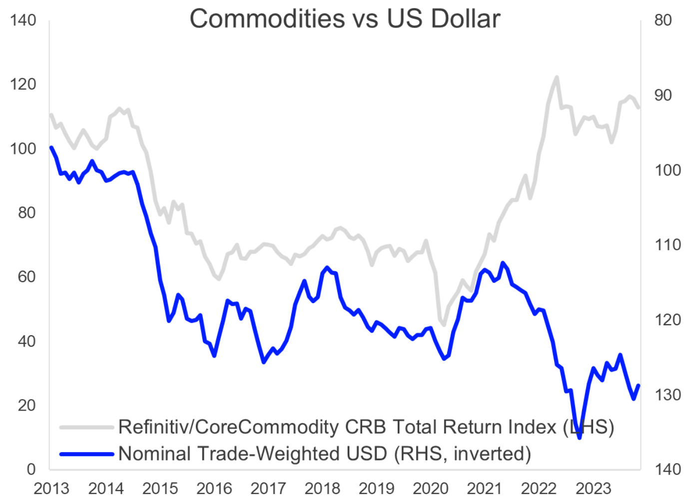


Chart 4: Commodities' returns vs equities have recovered from the long term trough in 2020. New LT cycle for commodities?

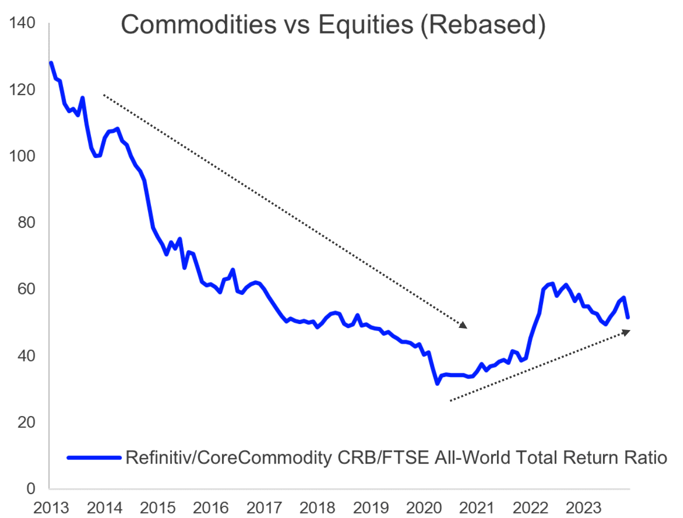
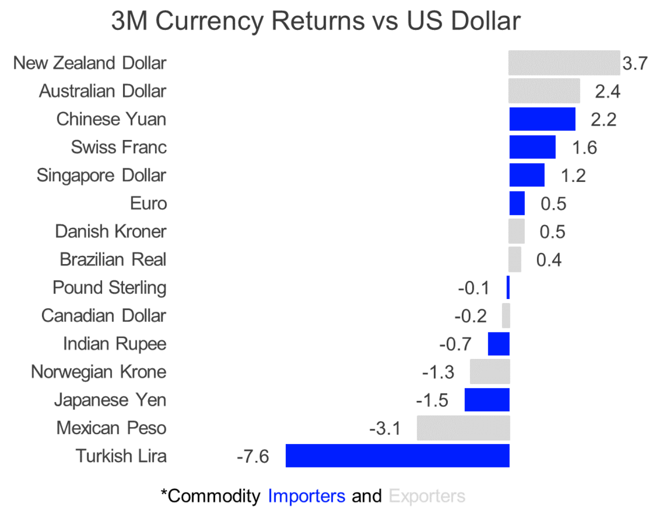


Chart 5: Currencies of commodity exporters outperformed vs importers in last 3M: investor belief in rising commodity prices.



Source: FTSE Russell/Refinitiv. All data as of November 30, 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.

Real Assets: Listed Real Estate and Infrastructure

Performance in the last 3M and sector breadth indicate that real estate might have turned the corner from its post-Covid weakness. Best performing sectors, like Data Centers, reflect shifts in the underlying economy.

Listed real estate, in the last 3M & 12M, did well in Developed Europe and UK, even outperforming equities in the last 3M (Charts 2 & 4), a sharp turnaround for regions that were hardest hit during the high inflation in 2022. Developed APAC ex Japan has been particularly weak in recent months.

Five of the 12 sectors in listed real estate had positive returns in the last 3M, while only three did so over 12M, indicating that the improvement in listed real estate is broadening. The sectors doing well over 3M include Data Centers, Industrial/Office and Lodging/Resorts. It is important to note that REIT performance is usually a leading indicator for Real Estate as an asset class.

Listed infrastructure in the last 3M performed better in developed markets, a reversal of the longer run 12M trend of infrastructure doing better in the faster-growing emerging markets.

Chart 1: Large dispersion in sector returns within listed real estate, with data centers benefitting from structural trends.

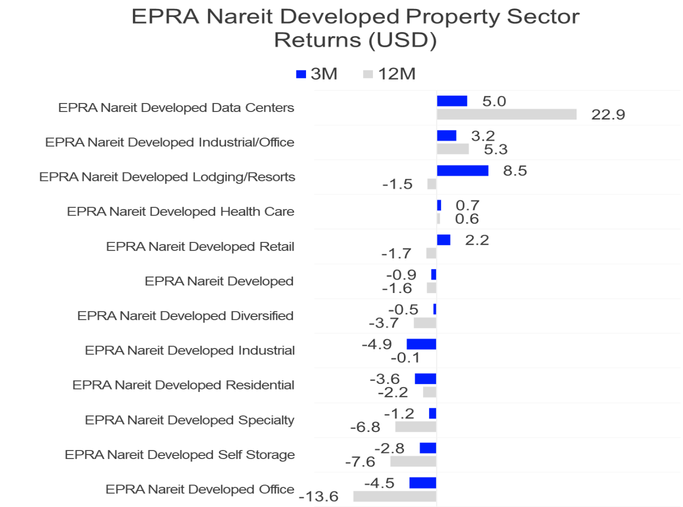


Chart 2: Listed real estate did very well in Developed Europe and UK, while the US underperformed in the last 3M & 12M.

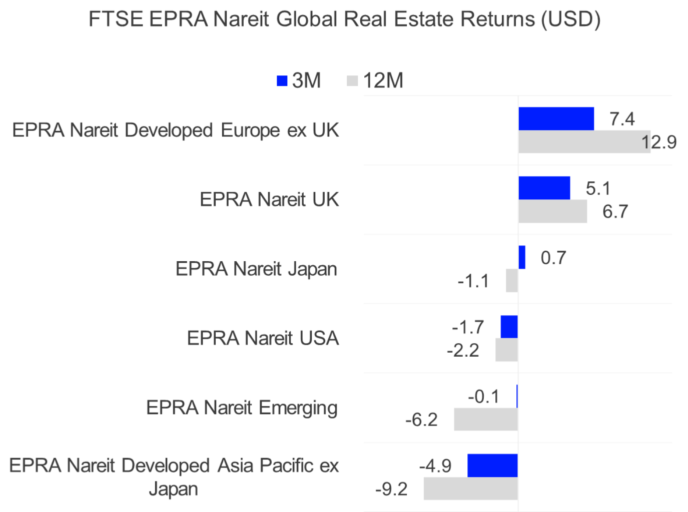


Chart 3: Global Core Infrastructure posted gains in the last 3M, in a turnaround from the negative returns over 12M.

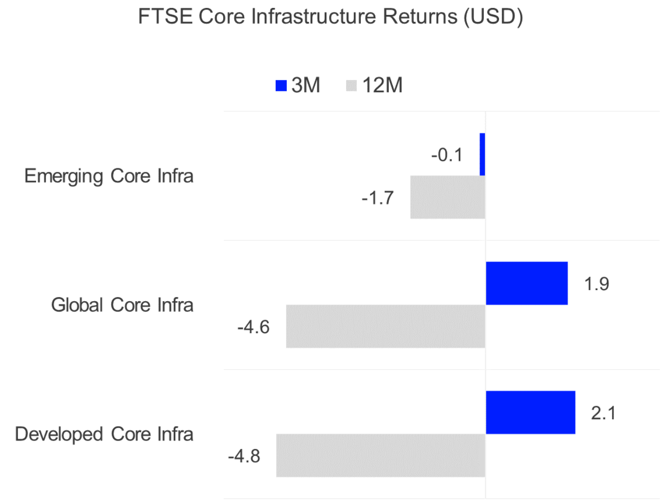


Chart 4: Listed real estate outperformed equity only in Developed Europe and UK in the last 3M.

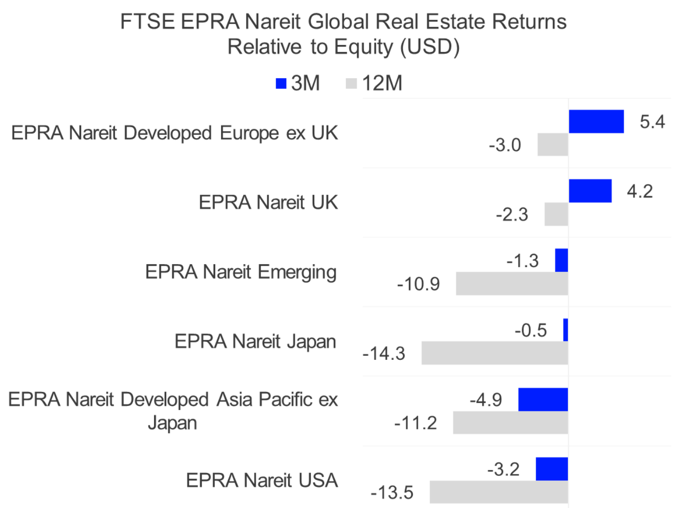
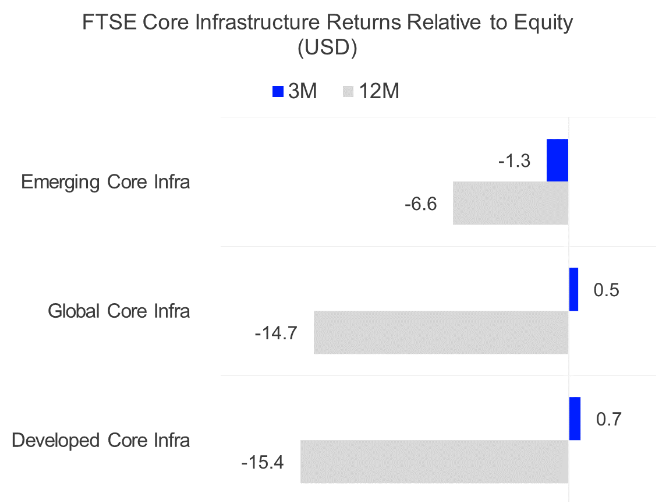


Chart 5: Core Infrastructure underperformed equities in the risk rally of last 12M, though their risk premia improved in the last 3M.



Source: FTSE Russell/Refinitiv. All data as of November 30, 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.

Currencies

The US dollar remains stronger than tightening yield differentials might suggest. The yen, though very weak given extreme rate differentials, might have bottomed.

With its steep rise over the last decade (Chart 2), the trade-weighted US dollar reached extreme over-valuation in Q4 22 (> two standard deviations from its 10-year mean). While it has weakened since, despite significant month-on-month gyrations, it remains ~10% higher than its 10-year average. The structural trend of de-dollarization (even though it stalled in 2023) would also indicate the US dollar has further room to fall (Chart 1).

Short-term interest rate differentials are a key determinant of currency values (Chart 3-6). The Euro and Canadian dollar have strengthened relative to trends in yield differentials, while sterling remains relatively weak. The Yen remains very weak, given extreme rate differential with the US, but it has bottomed out from the key 150 level. In keeping with its economy and equity markets doing better after a long period of stagnation, the share of Yen in global reserves has increased in recent years (5.40% in June 2023 vs 3.95% in December 2016).

Chart 1: The long term trend towards gradual de-dollarization stalled in 2023; the dollar share recovered marginally in Q2 23.

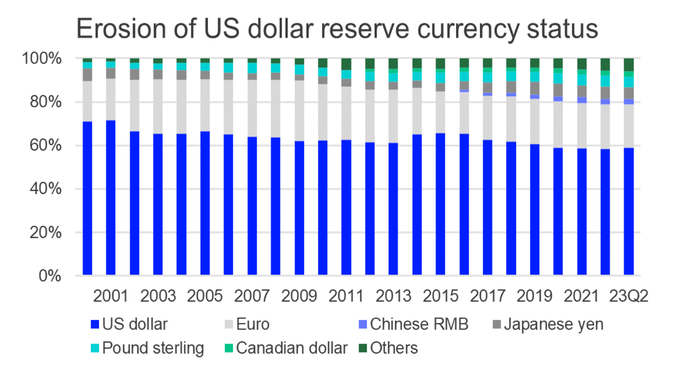


Chart 2: The trade-weighted US dollar peaked in Oct 22. LT patterns suggest it may fall further, despite monthly gyrations.

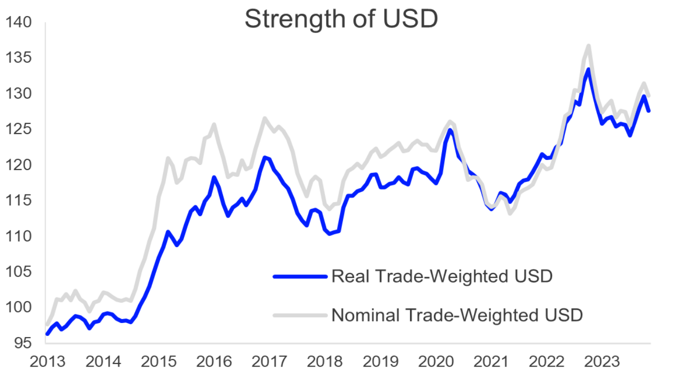


Chart 3: The Euro strengthened vs USD in 2023 even as rate differentials stayed flat, but is still 6% below its 10-year average.

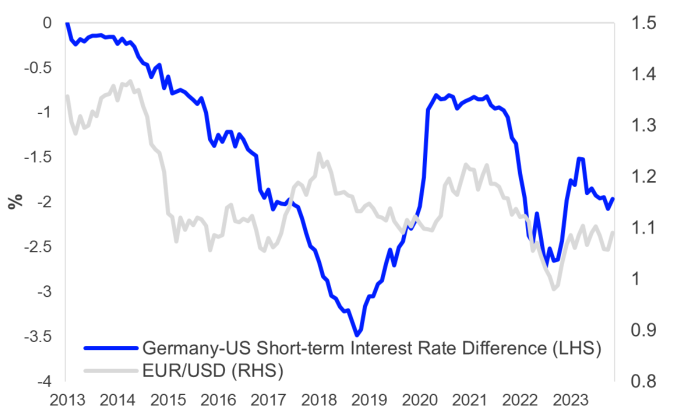


Chart 4: GBP strengthened slightly vs USD YTD even as rate differentials narrowed significantly. Still seems below fair value.

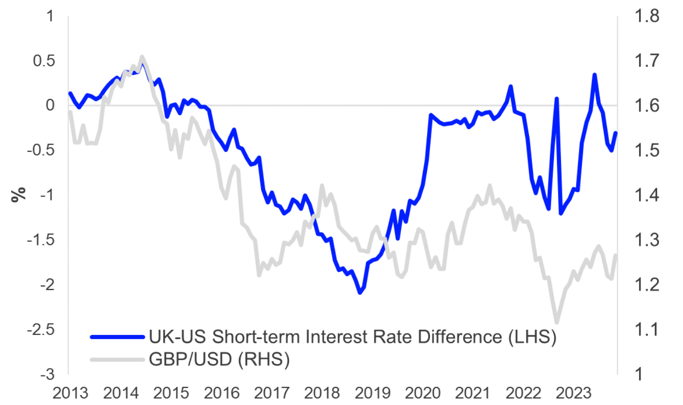


Chart 5: US-Japan rate differentials have recently bottomed, leading to the weak yen strengthening above the critical 150.

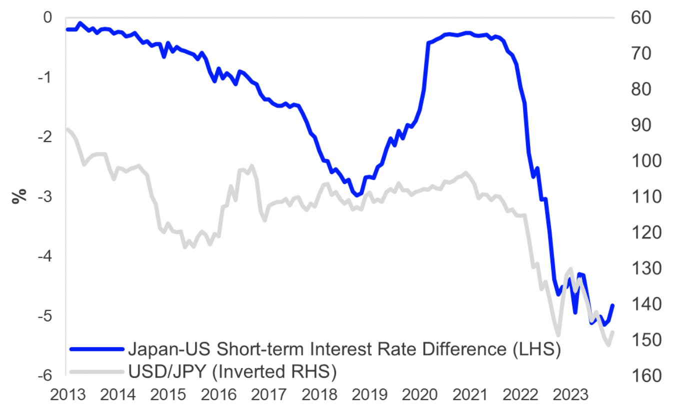
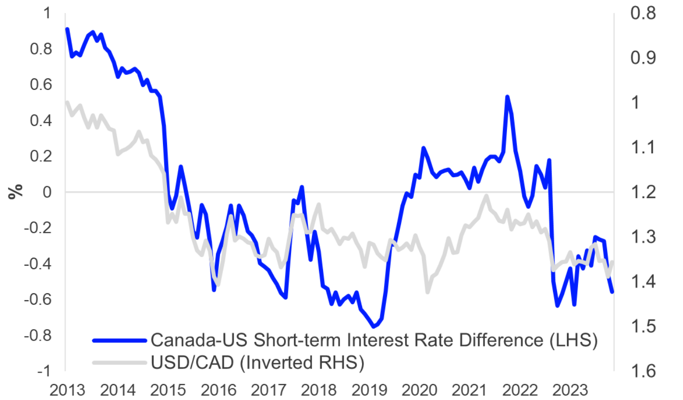


Chart 6: Canadian yields weakened vs the US YTD, but CAD remained flat, indicating a relatively strong currency.



Source: FTSE Russell/Refinitiv. All data as of November 30, 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.

Capital Flows

Fund flows showed a marked change in November, with major reversals in the outflows from equities and the US seen through much of 2023.

Global fund flow saw distinct changes over the last 3M, with the slowing flows in September and October turning to strong inflows in November. Fund flows in equities, which had been negative for most of 2023, reversed in November, with the strongest monthly inflows since early 2022. Meanwhile bond fund flows, which had been positive for most of 2023 but had turned negative in Q3 as bond yields rose, also saw inflows as yields dropped in November. Regionally the strongest November inflows in bond and equities were in the US, going against the sustained outflows seen in the US in the second half of 2023.

These flows match with the "risk on" narrative adopted across the markets in November, with the exception of the strong money market inflows which were also seen in November. However a more sustained period of positive flows are needed to establish any material change in the market beyond previous "false dawns" we've seen over the last 12-18 months.

SI flows continue to be weak for the last 6M after strength at the end of 2022 and beginning of 2023. SI equity flows picked up marginally in November. However SI flows across equities and bond didn't see the same "risk on" activity as the broader market.

Chart 1: Equities had the strongest monthly inflows since early 2022.

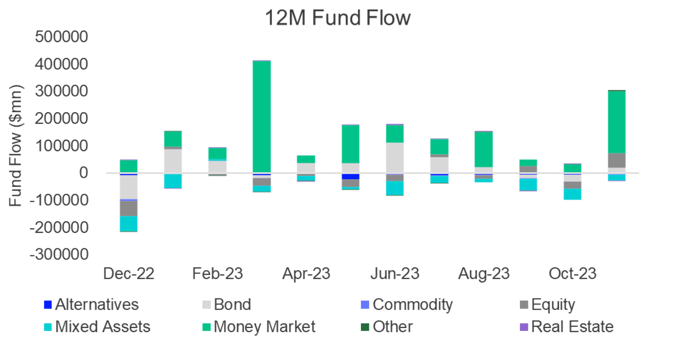


Chart 2: YTD, US equity flows have been strongest in Tech and positive in industries with a positive beta to growth.

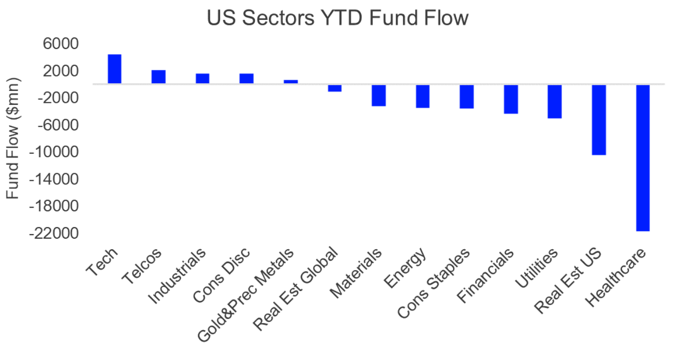


Chart 3: Positive YTD bond flows in all regions, while November saw strong inflows into US bonds.

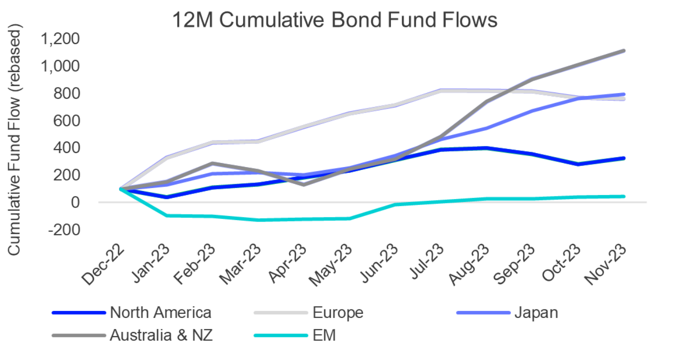


Chart 4: YTD equity flows reflect higher investor confidence in Japan & EM, though November saw strongest inflows into US.

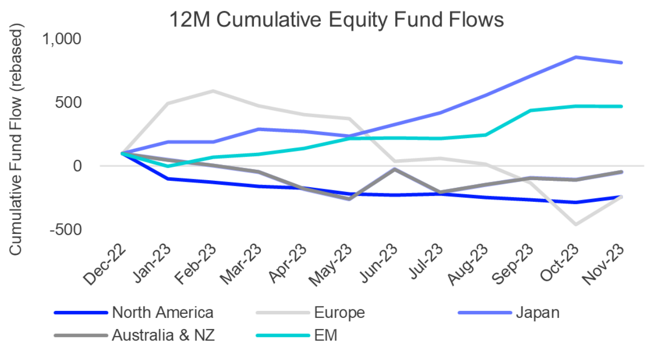


Chart 5: Strong flows into money market indicates caution, with yet slightly more risk-on, following recent inflows into equities.

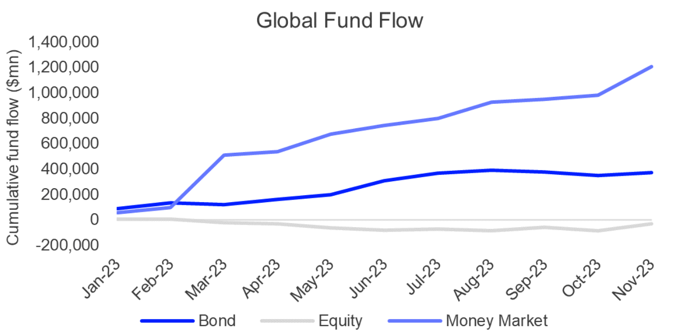
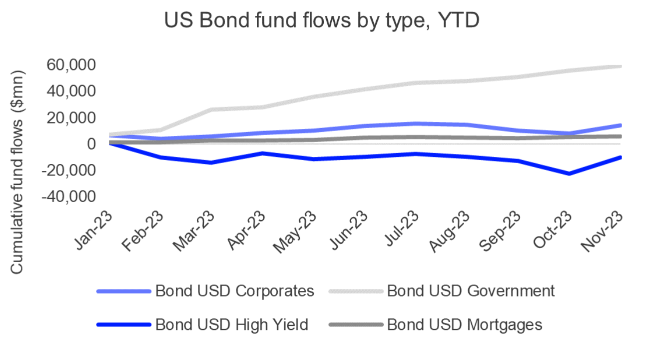


Chart 6: Still cautious but with a slightly more risk-on positioning, following recent inflows into credit and high yields.



Source: FTSE Russell/Refinitiv. All data as of November 30, 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: Equities and Fixed Income

Macro trends indicate that rates, even after the November-early December drop, have room to fall. Stock-bond trends indicate correction risk in equities, notably in the US.

The stock/bond ratio (Chart 2) went to an all-time high of 1.4x in March 2022, and started falling to the current 1.34x when rate hikes began. While 'higher for longer' rates (an end to the 30-year bond bull market) would logically keep the stock/bond ratio higher than pre-Covid 1.1x, falling PMI indicates stock valuations have room to fall relative to Bonds. Total stock capitalization/ GDP ratio, PE ratio at a macro level, remain 14% & 19% above the 10-year average for the All-World and the US respectively (Chart 1). The risk premium in equity is currently much lower than that of HY (Chart 4). Charts 1, 2 & 4 indicate that equities remain overvalued, more so in the US, implying equities could fall or bond prices could increase (yields could fall).

12M stock-bond correlations spiked to a high 85% in early 2023, when rate hikes drove both asset classes lower (Chart 3). The average before the start of rate hikes was sub-25%. The recent decrease to ~80% may continue with the rate pause or maybe higher stock/bond correlation is the back to pre-mid-90's normal?

Chart 1: Market cap relative to the real economy is 14% higher than its 10yr average globally, and almost 20% higher in the US.

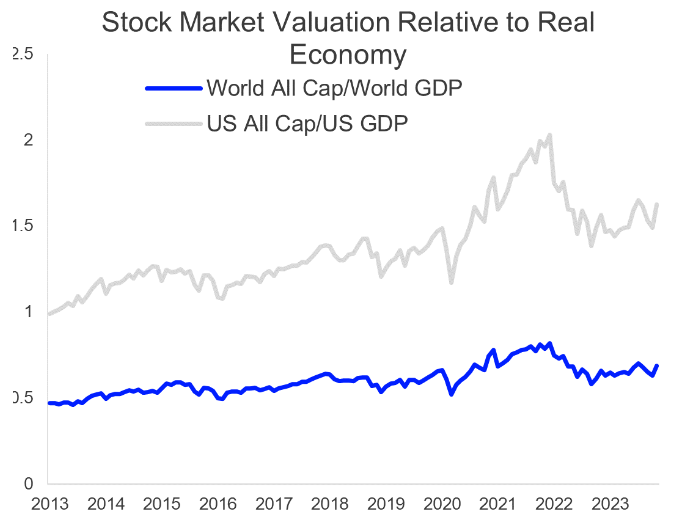


Chart 2: While lower than the peak, relative stock/bond valuations remain higher than underlying data would point to.

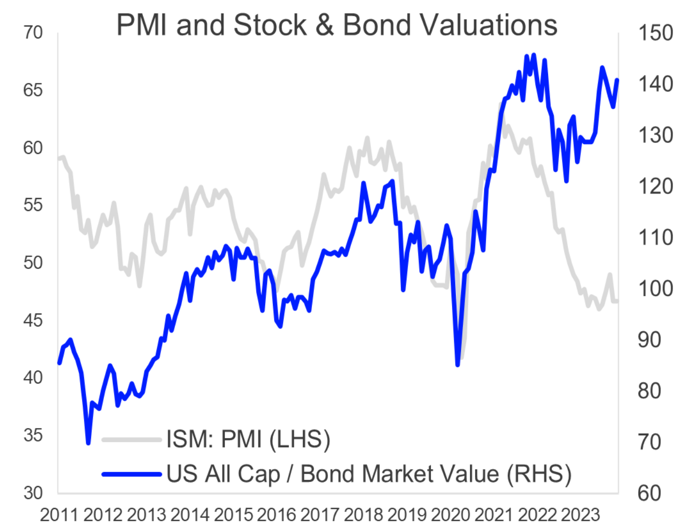


Chart 3: YTD stock/bond (12M) correlation has rolled over from its all time high in March 2023, with pause in rate hikes.

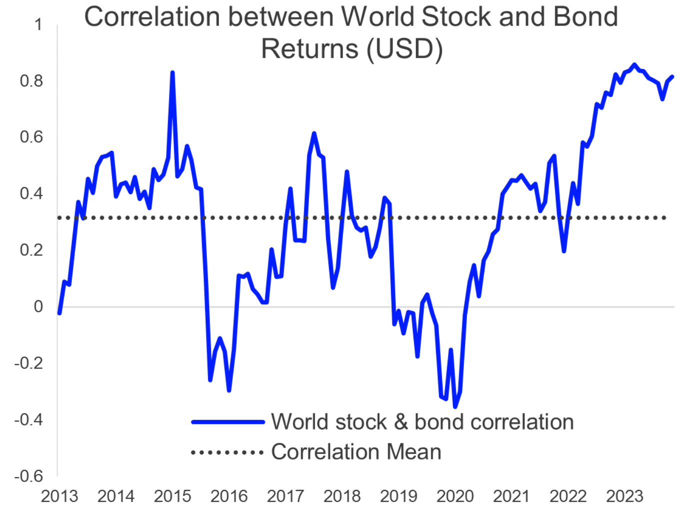


Chart 4: The US equity risk premium remains low relative to US HY credit spreads, suggesting downside risk for equities.

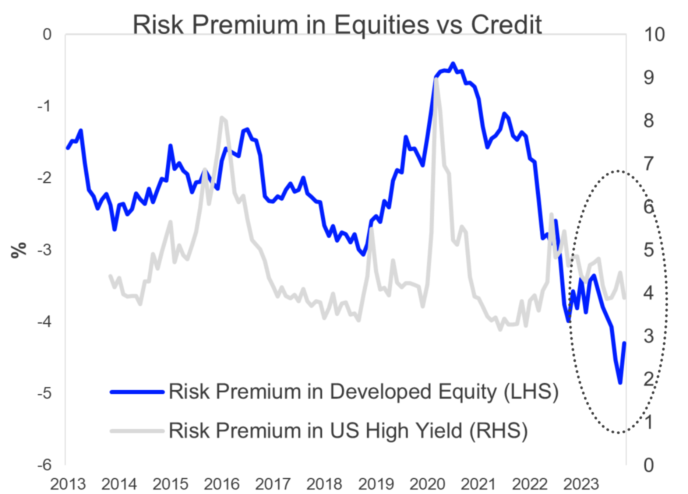
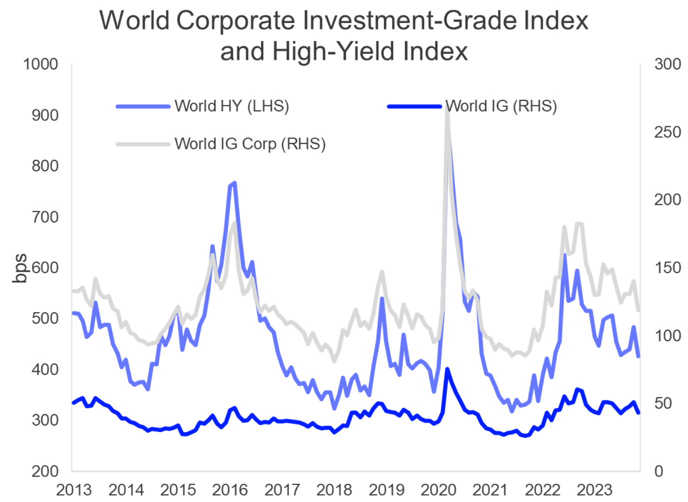


Chart 5: Credit spreads, particularly in HY, remain far lower than in 4Q 22. Cash on B/S built up in easy liquidity era helped.



Source: FTSE Russell/Refinitiv. All data as of November 30, 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: Return and Risk

Asset allocation depends on investor goals and changing risk-return profile of various asset classes. The interest rate spike over the last year has made Fixed Income a competitive asset class, and given its low volatility, has affected the relative appeal of other classes. Income investing is back, and the often-quoted 4% withdrawal rate for retirement portfolios is now well-supported.

Based on the broadest FTSE Russell indices in equities, fixed income, commodities, real estate & infrastructure; equities and commodities had the highest total return in last one and five years respectively, with equities outperforming commodities by a wide margin in last year (Chart 1). Fixed income was consistently a volatility dampener. It should be noted that the risk of FI increased in the last year (due to steep rate hikes), while the risk in all other asset classes fell, leading to a narrower risk gap between FI & others.

The income yield of Fixed Income rose significantly in the last year to exceed that of listed Infrastructure (Charts1 & 3). Listed real estate & infrastructure consistently had higher income return and was more attractive for income investors than equities.

The income or dividend yield (DY) in equities varies significantly among regions. DY in Developed Europe and EM equities almost matched that of infrastructure and are more than double that of US equities (Chart 2). DY is higher than local sovereign rates only in Japan, and marginally so in Developed APAC (Chart 4). Given home bias in investing, this implies that only in Japan are equities more attractive than fixed income for local income investors. The changing dynamics of previous 18 months have vastly increased opportunities for income investing, with listed real estate, infrastructure and fixed income providing healthy income yields in the range of 3.5-4.4%.

Chart 1: Equities for total return, listed real assets for income, fixed income to lower volatility alongside income yield?

1Y Annual	USD Total Return %	Income Yield %	Risk	Return/Risk
Equity	12.6	2.2	15.3	0.8
Fixed Income	2.1	4.0	8.7	0.2
Commodities	2.9	-	10.9	0.3
Real Estate	-2.0	4.4	18.5	-0.1
Infrastructure	-4.6	3.5	14.0	-0.3

5Y Annualised	USD Total Return %	Income Yield %	Risk	Return/Risk
Equity	9.6	2.2	18.0	0.5
Fixed Income	-0.9	2.0	7.4	-0.1
Commodities	10.6	-	20.1	0.5
Real Estate	0.2	4.0	19.9	0.0
Infrastructure	5.2	3.2	15.1	0.3

Chart 2: Dividend yields are lowest in the US, highest in EM & Developed Europe (dividend yields more 2x that of the US).

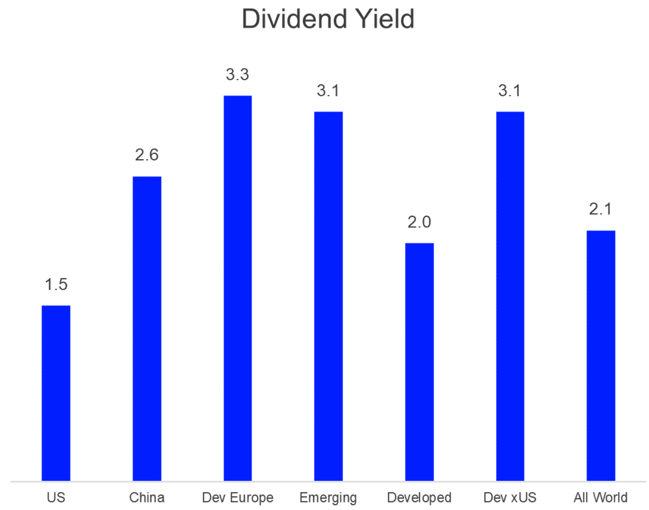


Chart 3: Earnings yield (=E/P) is sharply down in real estate & (less so) in equities. EY in infrastructure little higher than in FI.

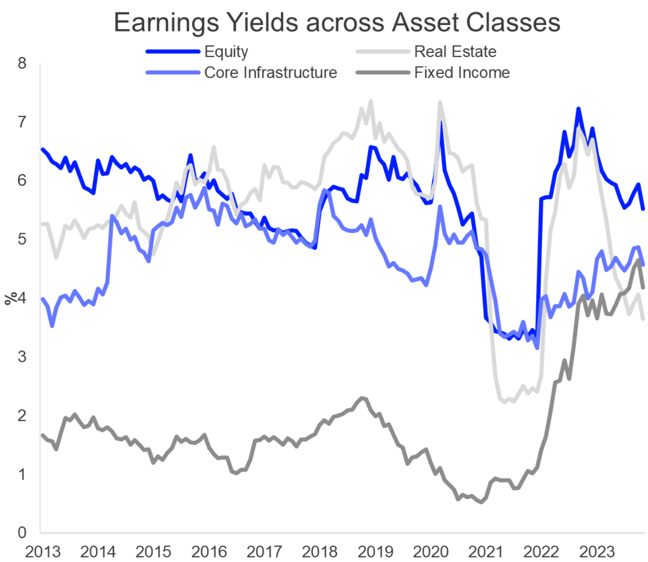


Chart 4: Dividend yield >sovereign yields in Japan & Developed APAC, make their equities more attractive for domestic buyers.

Equity Index	Dividend Yield %
All-World	2.13
USA	1.49
UK	4.00
Developed Europe ex UK	3.04
Japan	2.24
Developed Asia Pacific ex Japan	3.72
Emerging	3.13

Fixed Income Index	Yield to Maturity
World 7-10 Yr Government	3.38
United States 7-10 Yr Government	4.35
UK 7-10 Yr Government	4.11
EMU 7-10 Yr Government	3.07
Japan 7-10 Yr Government	0.57
Asia Pacific 7-10 Yr Government	3.51
Emerging Markets 7-10 Yr Government	4.76

Cross Asset: Return and Risk (continued)

Diversification pays as return leadership and risks vary over time. A notable change from the GFC-Covid era is that US equities are no longer consistently the best performing equity market. EM volatility has fallen to levels in-line with that of the All-World, while lower duration has helped HY do better than IG in recent years.

Asset class leadership has fluctuated significantly in recent years. Developed Europe ex UK in the last year, and crude oil in the last three years respectively had the best returns.

Risk-adjusted returns (a better investment metric) show that; in the last year, World HY and US HY were the stars, followed by Japanese equities. On a risk-adjusted basis, in the last three years, oil remained the star, followed by large cap equities in the US (Russell 1000) & UK (FTSE 100), while world government bonds did the worst. Performance within credit has been consistent; high yield had a higher return and risk-adjusted return than investment grade in the past 1 & 3 years.

In the last 3 years, equities had volatility in the 15-22% range, while bond market volatility was in the 7-11%, range, around half of that of equities. Listed real assets had volatility in the lower end of equities at 16-18%, while commodities had high volatility (30% for oil & 21% for copper). Contrary to popular perception, volatility in EM equity was in-line with that of All-World (both at 16%)

Chart 1: One-Year Risk-Return – Developed Europe ex UK equity, Japanese equity and gold had the highest return in the last 12M (in that order). On risk-adjusted returns, the best performers were the World HY, US HY and Japanese equities (in that order).

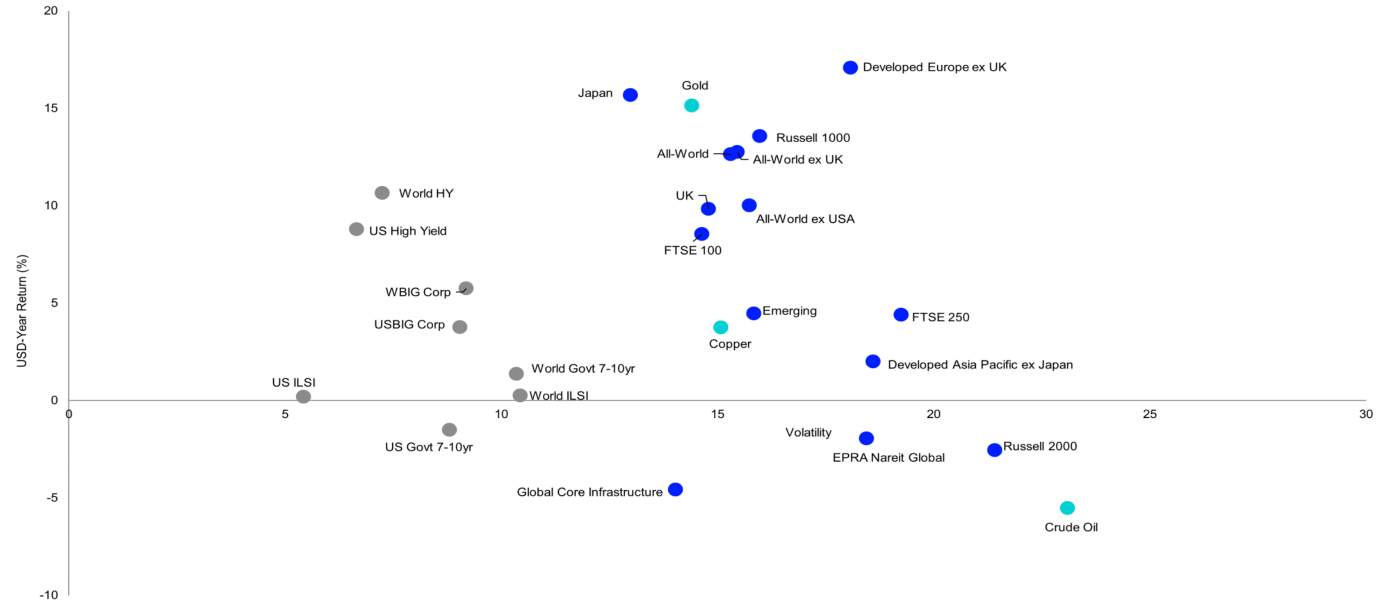
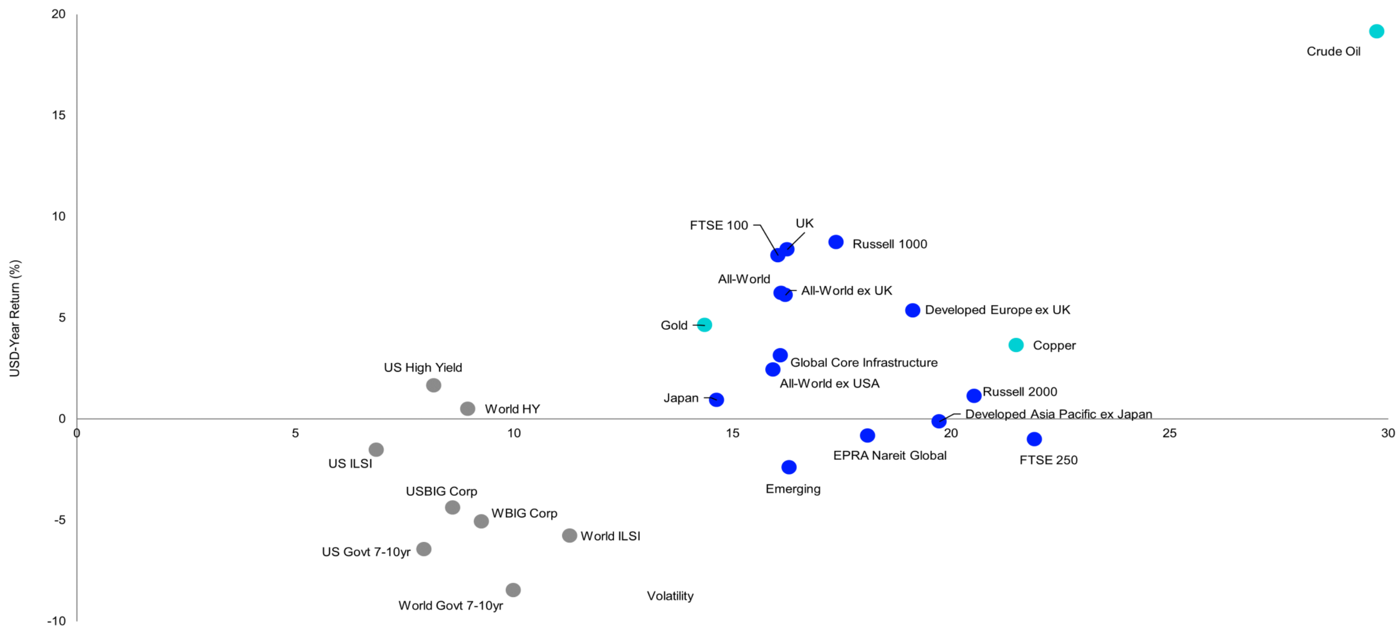


Chart 2: Three-Year Risk-Return – Crude oil had the highest return, by a large margin, in the last three years. US and UK large caps also did well. On a risk-adjusted basis, these three still did the best, but the outperformance of oil to equities was far narrower.



Source: FTSE Russell/Refinitiv. All data as of November 30, 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

Rates (real more than nominal) drove equities last year. US markets always look to the Fed, but data shows they should look to global rates. Correlation between different equity markets vary significantly over time.

In the last 1Y: US large cap had a high, and almost equal, correlation with global & US 7-10 year bonds, a reflection of the open US economy & financial markets. US equities were driven more by real rates than nominal rates (0.87 correlation with global inflation-linked bonds vs 0.78 with World Govt. 7-10 years). A comparison of the correlation matrix over the last 3Y vs 1Y shows the impact of rates on equities was much more in the last 1Y than 3Y, not surprising given the sharp rate hikes in most G7 countries.

US large caps are most correlated with Developed Europe ex UK. The correlation with (value-oriented) UK has fallen to a fairly low 0.70 in the last 1Y. US large cap & Japanese equities have gone through long periods of low correlation (2002-2008, 2011-2015), but today US equities are as strongly correlated to Japanese peers as to Developed Europe ex UK equities (Page 18, Chart 1).

Chart 1: 1-Year Correlation – US large cap equities have a very high correlation to US & World High Yield (0.90 & 0.87 resp.), higher than their correlation to UK & EM equities (0.70 & 0.77 resp). Commodities like gold & oil have provided diversification to equities.

Name	Russell 1000	Russell 2000	All-World	All-World ex USA	UK	Dev Europe ex UK	Japan	Asia Pacific 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 Infrastructure	EPRA Nareit Global	Gold	Crude Oil
Russell 1000	1.00	0.88	0.97	0.84	0.70	0.83	0.84	0.81	0.77	0.77	0.80	0.90	0.82	0.78	0.87	0.87	0.80	0.82	0.86	0.35	-0.22
Russell 2000	0.88	1.00	0.86	0.76	0.70	0.74	0.71	0.74	0.69	0.50	0.53	0.84	0.63	0.53	0.64	0.79	0.61	0.62	0.86	0.08	0.07
All-World	0.97	0.86	1.00	0.95	0.83	0.93	0.92	0.92	0.89	0.83	0.84	0.91	0.90	0.86	0.92	0.93	0.90	0.89	0.93	0.45	-0.22
All-World ex USA	0.84	0.76	0.95	1.00	0.93	0.97	0.94	0.98	0.96	0.82	0.80	0.84	0.92	0.87	0.90	0.93	0.93	0.91	0.94	0.52	-0.19
UK	0.70	0.70	0.83	0.93	1.00	0.94	0.78	0.88	0.84	0.66	0.64	0.74	0.78	0.71	0.74	0.84	0.81	0.82	0.90	0.34	-0.06
Dev Europe ex UK	0.83	0.74	0.93	0.97	0.94	1.00	0.88	0.92	0.87	0.83	0.82	0.86	0.91	0.88	0.90	0.94	0.93	0.91	0.94	0.51	-0.25
Japan	0.84	0.71	0.92	0.94	0.78	0.88	1.00	0.96	0.94	0.84	0.81	0.81	0.92	0.87	0.89	0.88	0.91	0.84	0.86	0.49	-0.26
Dev Asia Pacific ex Japan	0.81	0.74	0.92	0.98	0.88	0.92	0.96	1.00	0.98	0.80	0.77	0.81	0.91	0.86	0.87	0.91	0.92	0.87	0.93	0.55	-0.19
Emerging	0.77	0.69	0.89	0.96	0.84	0.87	0.94	0.98	1.00	0.74	0.73	0.73	0.85	0.82	0.85	0.84	0.87	0.87	0.86	0.57	-0.14
US Govt 7-10yr	0.77	0.50	0.83	0.82	0.66	0.83	0.84	0.80	0.74	1.00	0.97	0.82	0.97	0.97	0.93	0.87	0.94	0.79	0.76	0.69	-0.42
US ILSI	0.80	0.53	0.84	0.80	0.64	0.82	0.81	0.77	0.73	0.97	1.00	0.82	0.92	0.96	0.96	0.85	0.91	0.81	0.73	0.69	-0.37
US High Yield	0.90	0.84	0.91	0.84	0.74	0.86	0.81	0.81	0.73	0.82	0.82	1.00	0.89	0.82	0.85	0.97	0.86	0.76	0.91	0.36	-0.08
USBIG Corp	0.82	0.63	0.90	0.92	0.78	0.91	0.92	0.91	0.85	0.97	0.92	0.89	1.00	0.97	0.94	0.95	0.99	0.86	0.88	0.63	-0.36
World Govt 7-10yr	0.78	0.53	0.86	0.87	0.71	0.88	0.87	0.86	0.82	0.97	0.96	0.82	0.97	1.00	0.97	0.90	0.98	0.88	0.80	0.77	-0.40
World ILSI	0.87	0.64	0.92	0.90	0.74	0.90	0.89	0.87	0.85	0.93	0.96	0.85	0.94	0.97	1.00	0.91	0.95	0.91	0.82	0.68	-0.35
World HY	0.87	0.79	0.93	0.93	0.84	0.94	0.88	0.91	0.84	0.87	0.85	0.97	0.95	0.90	0.91	1.00	0.95	0.86	0.96	0.49	-0.16
WBIG Corp	0.80	0.61	0.90	0.93	0.81	0.93	0.91	0.92	0.87	0.94	0.91	0.86	0.99	0.98	0.95	0.95	1.00	0.91	0.89	0.69	-0.35
Global Core Infrastructure	0.82	0.62	0.89	0.91	0.82	0.91	0.84	0.87	0.87	0.79	0.81	0.76	0.86	0.88	0.91	0.86	0.91	1.00	0.84	0.62	-0.30
EPRA Nareit Global	0.86	0.86	0.93	0.94	0.90	0.94	0.86	0.93	0.86	0.76	0.73	0.91	0.88	0.80	0.82	0.96	0.89	0.84	1.00	0.41	-0.12
Gold	0.35	0.08	0.45	0.52	0.34	0.51	0.49	0.55	0.57	0.69	0.69	0.36	0.63	0.77	0.68	0.49	0.69	0.62	0.41	1.00	-0.46
Crude Oil	-0.22	0.07	-0.22	-0.19	-0.06	-0.25	-0.26	-0.19	-0.14	-0.42	-0.37	-0.08	-0.36	-0.40	-0.35	-0.16	-0.35	-0.30	-0.12	-0.46	1.00

Chart 2: 3-Year Correlation – In the post Covid era of rising rates, equities were driven more by real than nominal rates. US equities were driven more by global than US rates. Listed real assets have a high beta to equities (real estate more than infrastructure).

Name	Russell 1000	Russell 2000	All-World	All-World ex USA	UK	Dev Europe ex UK	Japan	Asia Pacific 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 Infrastructure	EPRA Nareit Global	Gold	Crude Oil
Russell 1000	1.00	0.88	0.98	0.87	0.80	0.90	0.79	0.83	0.64	0.60	0.76	0.88	0.75	0.71	0.81	0.88	0.78	0.84	0.91	0.17	0.22
Russell 2000	0.88	1.00	0.88	0.82	0.78	0.81	0.78	0.83	0.63	0.40	0.58	0.82	0.60	0.54	0.62	0.81	0.63	0.66	0.83	-0.01	0.38
All-World	0.98	0.88	1.00	0.95	0.88	0.95	0.87	0.91	0.75	0.63	0.76	0.88	0.80	0.77	0.83	0.91	0.84	0.86	0.94	0.24	0.25
All-World ex USA	0.87	0.82	0.95	1.00	0.94	0.96	0.91	0.96	0.88	0.62	0.69	0.82	0.80	0.78	0.78	0.89	0.86	0.82	0.91	0.32	0.30
UK	0.80	0.78	0.88	0.94	1.00	0.95	0.80	0.88	0.73	0.49	0.61	0.77	0.66	0.67	0.70	0.84	0.74	0.77	0.88	0.23	0.47
Dev Europe ex UK	0.90	0.81	0.95	0.96	0.95	1.00	0.84	0.89	0.73	0.61	0.70	0.84	0.78	0.77	0.80	0.90	0.85	0.82	0.92	0.30	0.27
Japan	0.79	0.78	0.87	0.91	0.80	0.84	1.00	0.88	0.78	0.63	0.68	0.84	0.81	0.77	0.73	0.88	0.84	0.69	0.77	0.22	0.21
Dev Asia Pacific ex Japan	0.83	0.83	0.91	0.96	0.88	0.89	0.88	1.00	0.86	0.55	0.66	0.78	0.74	0.71	0.73	0.84	0.79	0.81	0.89	0.35	0.31
Emerging	0.64	0.63	0.75	0.88	0.73	0.73	0.78	0.86	1.00	0.55	0.52	0.59	0.71	0.68	0.63	0.68	0.75	0.64	0.72	0.36	0.19
US Govt 7-10yr	0.60	0.40	0.63	0.62	0.49	0.61	0.63	0.55	0.55	1.00	0.83	0.64	0.93	0.93	0.83	0.66	0.89	0.52	0.58	0.47	-0.14
US ILSI	0.76	0.58	0.76	0.69	0.61	0.70	0.68	0.66	0.52	0.83	1.00	0.79	0.82	0.84	0.93	0.78	0.82	0.70	0.72	0.44	0.03
US High Yield	0.88	0.82	0.88	0.82	0.77	0.84	0.84	0.78	0.59	0.64	0.79	1.00	0.79	0.75	0.78	0.98	0.82	0.69	0.82	0.16	0.22
USBIG Corp	0.75	0.60	0.80	0.80	0.66	0.78	0.81	0.74	0.71	0.93	0.82	0.79	1.00	0.94	0.86	0.83	0.98	0.65	0.75	0.38	-0.02
World Govt 7-10yr	0.71	0.54	0.77	0.78	0.67	0.77	0.77	0.71	0.68	0.93	0.84	0.75	0.94	1.00	0.91	0.82	0.97	0.63	0.70	0.57	0.00
World ILSI	0.81	0.62	0.83	0.78	0.70	0.80	0.73	0.73	0.63	0.83	0.93	0.78	0.86	0.91	1.00	0.81	0.89	0.74	0.79	0.55	0.02
World HY	0.88	0.81	0.91	0.89	0.84	0.90	0.88	0.84	0.68	0.66	0.78	0.98	0.83	0.82	0.81	1.00	0.88	0.72	0.85	0.26	0.23
WBIG Corp	0.78	0.63	0.84	0.86	0.74	0.85	0.84	0.79	0.75	0.89	0.82	0.82	0.98	0.97	0.89	0.88	1.00	0.69	0.79	0.46	0.05
Global Core Infrastructure	0.84	0.66	0.86	0.82	0.77	0.82	0.69	0.81	0.64	0.52	0.70	0.69	0.65	0.63	0.74	0.72	0.69	1.00	0.86	0.34	0.18
EPRA Nareit Global	0.91	0.83	0.94	0.91	0.88	0.92	0.77	0.89	0.72	0.58	0.72	0.82	0.75	0.70	0.79	0.85	0.79	0.86	1.00	0.25	0.28
Gold	0.17	-0.01	0.24	0.32	0.23	0.30	0.22	0.35	0.36	0.47	0.44	0.16	0.38	0.57	0.55	0.26	0.46	0.34	0.25	1.00	-0.24
Crude Oil	0.22	0.38	0.25	0.30	0.47	0.27	0.21	0.31	0.19	-0.14	0.03	0.22	-0.02	0.00	0.02	0.23	0.05	0.18	0.28	-0.24	1.00

Source: FTSE Russell/Refinitiv. All data as of November 30, 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.

In the last 3Y, US large cap equities had a 0.88 correlation with US high yield, while the All-World had a 0.91 correlation with Global high yield bonds. The respective correlations of US equities with US investment grade were 0.60-0.75 and 0.77-0.84 for the All-World vs global IG (rates & corporates respectively). The diversification benefits implied in the 60/40 portfolio are driven mainly by sovereign bonds and investment-grade corporates.

Falling correlations between developed & emerging equity markets are driven mainly by US-China polarization.

The correlation between US and EM equities peaked just after the Great Financial Crisis, and has been decreasing since (Chart 2). Breaking down EM into China and EM ex China (Chart 3) shows that the lower DM-EM correlations are driven mainly by China, in line with the diverging economic paths of the US and China. This divergence in economic paths seems to have bottomed in 2022.

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

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. Growth commodities (like oil) and defensive commodities (like gold), both have far lower correlation to equities than different equity markets have among themselves. In the last 1Y, crude oil had a negative correlation, while gold had a low 0.35-0.45 correlation to US large cap and the All-World respectively.

Listed real assets have a high beta to listed equities.

Listed real estate & 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 & infrastructure to US large-cap and global equity has remained north of 84% over the last 3Y. The correlation of equities is significantly higher with listed real estate than with listed infrastructure.

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

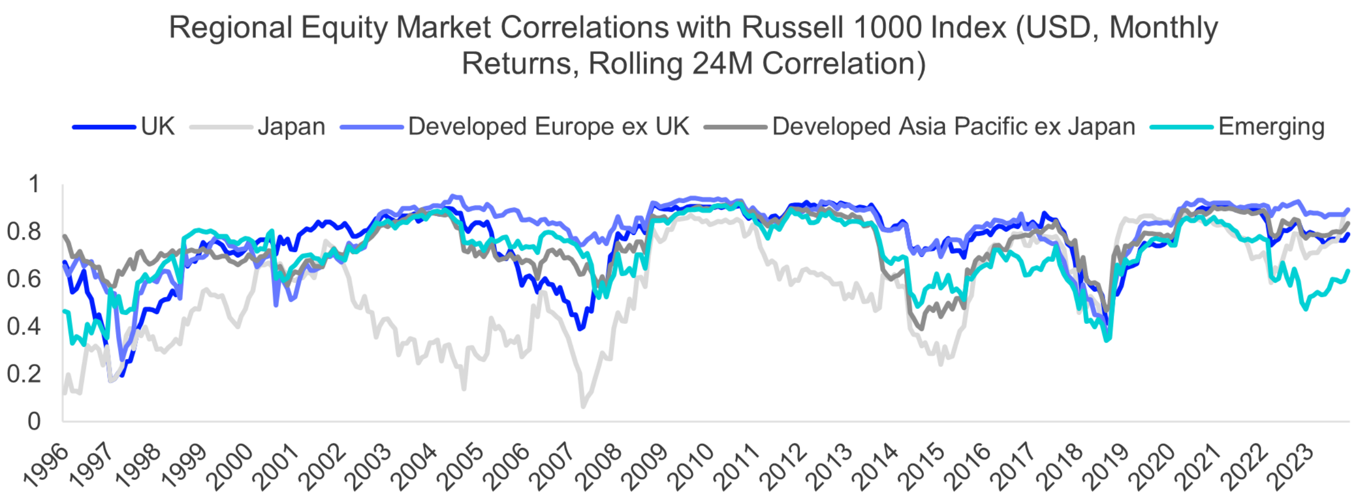


Chart 2: The correlation between DM and EM equities has been dropping steadily over last 20 years & fell again in recent years.

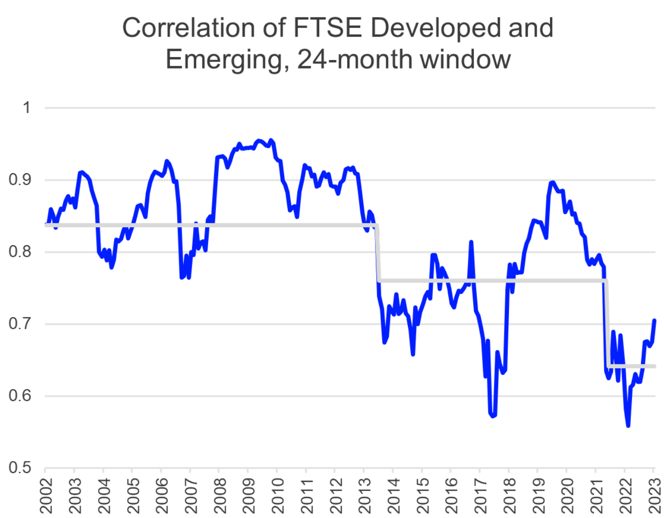


Chart 3: Lower DM-EM equity correlations have been driven mainly by US-China polarization, and seems to have bottomed.

Source: FTSE Russell/Refinitiv. All data as of November 30, 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.

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.
- Equity volatility is measured as rolling 24-month annualized volatility using monthly observations.
- 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 sustainable investment flows, the data used is the same as the Responsible Investment definition used by Lipper, a tighter definition than just the Ethical restriction.
- For US bond type flow data, the data used are the monthly bond fund flows in US domiciled USD bond funds, as defined by Lipper Global Fund Classification.
- In comparing equity dividend yields with sovereign 7-10 year yields, we are using the closest approximation. For Developed Europe ex UK that includes FTSE EMU Government Bond Index with 9 countries (DMs within Euro Area, namely Austria, Belgium, Finland, France, Germany, Ireland, Italy, Netherlands and Spain) and Developed APAC ex Japan is proxied by FTSE Asia Pacific Government Bond Index which apart from the 5 developed markets (Australia, NZ, Hong Kong, Korea and Singapore) also includes 5 EMs (China, Indonesia, Malaysia, Philippines, and Thailand).
- All data is as of November 30, 2023 with the exception of the most recent Fed Dot Plot that got released September 20, 2023.

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

FTSE RUSSELL
An LSEG Business

ABOUT FTSE RUSSELL

FTSE Russell is a leading global provider of index and benchmark solutions, spanning diverse asset classes and investment objectives. As a trusted investment partner we help investors make better-informed investment decisions, manage risk, and seize opportunities.

Market participants look to us for our expertise in developing and managing global index solutions across asset classes. Asset owners, asset managers, ETF providers and investment banks choose FTSE Russell solutions to benchmark their investment performance and create investment funds, ETFs, structured products, and index-based derivatives. Our clients use our solutions for asset allocation, investment strategy analysis and risk management, and value us for our robust governance process and operational integrity.

For over 35 years we have been at the forefront of driving change for the investor, always innovating to shape the next generation of benchmarks and investment solutions that open up new opportunities for the global investment community.

CONTACT US

To learn more, visit lseg.com/ftse-russell; email info@ftserussell.com; or call your regional Client Service team office:

EMEA +44 (0) 20 7866 1810
North America +1 877 503 6437

Asia-Pacific
Hong Kong +852 2164 3333
Tokyo +81 3 6441 1430
Sydney +61 (0) 2 7228 5659

Author
Indrani De, CFA, PRM
Head of Global Investment Research, FTSE Russell,
Indrani.De@lseg.com