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In our experience, volatility and uncertainty – while not necessarily welcome – can create opportunities. While we acknowledge the challenges of the current environment, we take a nuanced view across markets and asset classes and remain optimistic when it comes to our ability to find near-term opportunities for investors."

A letter to investors

This time last year, we forecast heightened volatility in the global economy as most major markets transitioned from more than a decade of historically low interest rates. That proved to be the case as we experienced a year of meaningful disruption and caution across markets.

Higher interest rates have far-reaching implications for every asset class. As global growth slows, inflation remains high and the risk of recession lingers in several key markets. Naturally these factors will continue to shape the investment environment, but one of the biggest changes in the last year is the level of geopolitical risk, tragically evidenced in Ukraine and the Middle East. We believe higher levels of geopolitical risk are likely to be a durable feature of the investment landscape for years to come.

One consequence is a marked departure from globalisation and integration, critical features of the post-Cold War consensus. Reshoring is on the rise and trade restrictions are growing. Climate change is also accelerating and being felt most acutely by communities in developing markets. As our Outlook 2024 suggests, we are in a world of transition.

Our outlook emphasises several long-term thematics, including decarbonisation and the demands of a net zero economy, digitalisation, and demographic trends driving the need for investment in essential infrastructure and real assets. It also highlights emerging trends, notably the rise of generative artificial intelligence (AI), which will ultimately transform productivity and reset many activities and roles across economies.

In our experience, volatility and uncertainty (while not necessarily welcome) can create opportunities. Our investment thematics span the globe and our investments in infrastructure, renewables, and green energy represent a continuation of our longstanding strategy and market leadership. Our outlook in specific areas of credit, real estate and listed equities reflects more recent opportunities being driven by economic conditions in local markets. As we outline in greater detail in the report that follows, some key opportunities we are focused on include:

- 1. Energy transition This last year has witnessed unprecedented interest in new technologies and approaches to decarbonisation. In the US, the energy transition remains a major theme, and the Inflation Reduction Act has positioned the US as a global leader in clean hydrogen; battery storage; electric vehicles and related infrastructure; carbon capture; and critical elements of the circular economy, such as waste-to-energy. These subsectors present attractive investment opportunities. With global competition for human and financial capital a given, we are seeing other nations accelerate to keep pace with the US's push forward.
- 2. Infrastructure Not only does infrastructure have a well-established, attractive risk-return profile, it also has strong defensive characteristics, a trait that is likely to serve the asset class well in 2024. Deal volumes were weak globally in 2023 but should pick up over the course of the year. Digital infrastructure also continues to see strong demand, particularly in Asia and in the US.
- **3. Credit -** With inflation showing signs of falling, developed-world growth slowing, central banks pausing, and not much priced in in terms of interest rate cuts over the coming year, we see bonds offering value. As of now, credit spreads do not yet reflect recessionary conditions, so we prefer bonds at the low-risk end of the spectrum. Considering where current yields are for investment grade and sub-investment-grade credit, we also expect strong investor demand for private credit in 2024.
- 4. Real estate With disruption in real estate markets during 2023, we see selective opportunities arising in 2024 particularly in the living and logistics sectors, which are supported by long-term demand drivers, such as UK housing. Our strategy of partnering with specialist operators provides enhanced access for our clients to take advantage of the cycle and invest in these real estate opportunities across regions and markets. As local sector-specific experts, these operators are well positioned to take advantage of volatility and dislocation in their markets.

Our views reflect the expertise and insights of our global team of investment professionals. While we acknowledge the challenges of the current environment, we take a nuanced view across markets and asset classes and remain optimistic when it comes to our ability to find near-term opportunities for investors.

We look forward to discussing the views in this Outlook with you over the coming months.

Ben Way Group Head,

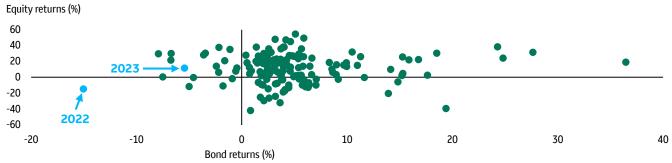
Macquarie Asset Management

Global economic and investment outlook

The structural cross-currents of regime change

2023 has, so far, been a better year for investors than 2022. At the time of writing, US equities (S&P 500® Index) have returned 11.5% year to date (YTD), while bonds (10-year Treasuries) have returned -5.4% (Figure 1).¹ In 2022, by comparison, both asset classes returned -15.0%.² It is exceedingly rare for both US equities and US bonds to produce negative returns over a full year – indeed in the 152 years between 1872 and 2023 there have been only five such instances.

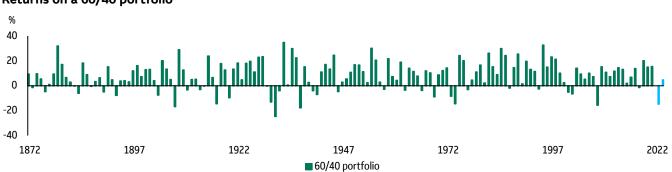
Figure 1: **Returns on US equities and bonds since 1872**



Sources: Robert Shiller online data, Yale Department of Economics, accessed 15 November 2023; Macrobond (November 2023).

The standard 60/40 portfolio³ has produced a 4.7% YTD return in 2023, compared with -15.0% for full-year 2022 (Figure 2). Since 1872, such a portfolio has produced an average annual return⁴ of 8.3%, and this year's YTD return sits in the 37th percentile. By comparison, 2022 had the fifth-worst annual return on record.

Figure 2: **Returns on a 60/40 portfolio**



Sources: Robert Shiller online data, Yale Department of Economics, accessed 15 November 2023; Macrobond (November 2023).

- 1. Average for the month to 15 November 2023 over the month average for December 2022.
- 2. Month average for December 2022 over month average for December 2021.
- 3. Portfolio consisting of 60% equities (represented by S&P 500 Index) and 40% bonds (represented by 10-year US Treasuries).
- 4. December month average over December month average.

Notwithstanding the improvement in returns this year, the macroeconomic backdrop remains volatile and challenging.

- The good news story has been the US, which did not enter recession in 2023 despite an overwhelming consensus (including from us) that it would. It has proved remarkably resilient in the face of the sharpest tightening of monetary policy in 40 years, a major hit to households' real incomes, elevated geopolitical tensions, and domestic political volatility.
- Europe and the UK are at the other end of the spectrum, with Germany the weakest of the G7 economies over the last year, contracting 0.4% year on year (YoY) to 3Q23.
- China has also disappointed expectations, with its property market continuing to weigh heavily on domestic demand, despite hopes at the start of the year that the combination of a lifting of COVID-19 restrictions and policy stimulus would see a modest but steady improvement in growth in 2023.

As we look ahead to 2024, there are still plenty of cyclical headwinds for investors to navigate.

- The Euro area and UK economies are either already in, or likely to soon enter, outright recession. While the impact of the energy price shock is fading, the impact of tighter monetary policy is in only its early stages.
- The US has good momentum, but key leading indicators – such as the yield curve, monetary aggregates, and credit conditions – suggest the risk of a slowdown in growth, or even recession, remains high.
- China is challenged by a property market that is in a deep funk, weak domestic demand, and limited policy flexibility. Over the medium term, demographics are a formidable challenge and productivity growth looks to be on the slide.

Cyclical volatility creates opportunities for active investors to add value, however. In the asset class sections of our Outlook we have focused on where, in each asset class, the opportunities lie and how we believe investors may want to position their portfolios to maximise risk-adjusted returns over the next 12-18 months.

But, in our view, having a firm grip on the cyclical dynamics of the global economy is not enough. There have been powerful structural changes in recent years in how the global economy behaves, and understanding these deep forces, and how they intersect with the cycle, will be crucial to return delivery in the coming years.

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There have been powerful structural changes in recent years in how the global economy behaves, and understanding these deep forces, and how they intersect with the cycle, will be crucial to return delivery in the coming years."

In previous Outlooks we have talked in detail about how the global economy has entered a new "macroeconomic regime," where the megatrends driving outcomes are fundamentally different from those seen in the three decades before COVID-19. The key point, in our view, is that growth in the supply side of the global economy is slowing down as globalisation reverses, geopolitical tensions rise, demographics bite, and productivity growth remains sluggish. Potential growth is lower, the growth-inflation trade-off is now less benign, and policy – both monetary and fiscal – is likely to be more constrained going forward than it has been for decades.

- Developed world (DW) inflation will likely be more erratic, stickier at higher levels, and require higher interest rates to keep it at, or around, central bank targets. Target overshoots may become more common.
- Return on assets and return on equity will generally be lower. The former may be weighed down by weaker nominal GDP growth and the latter could face the additional headwind of higher debt costs.
- Fiscal and monetary policy may be periodically constrained. Inflation may sometimes require central banks to tighten more, or ease less, than they would ideally like given the growth backdrop. Debt levels and interest costs will likely constrict governments' room to manoeuvre.

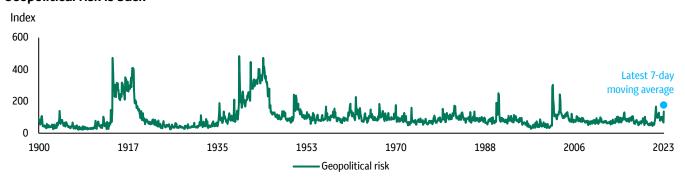
- GDP growth is likely to be more volatile and recessions more frequent, due both to more external shocks and less policy headroom. Downturns may be milder than in recent history, however. We aren't returning to the 1970s, in our view, but we could be reverting to a world of stop-go economics.⁵
- R* (the natural rate of interest for the global economy) may, indeed, be higher, but not because potential growth is higher (it is not). Rather, it is due, in our view, to major changes in the amount of desired savings available for private investment relative to desired private sector investment. The global savings glut is now much less, while the draw on the savings pool from the public sector (to maintain current spending levels and to fund the energy transition and other investments) is much greater.

Over the last year we have observed additional evidence that we are indeed in this new macroeconomic world: geopolitical tensions have risen, reshoring is increasingly happening, trade restrictions globally are increasing, and core inflation rates have proved remarkably sticky.

Geopolitical tensions: Deglobalisation and the end of the peace dividend

Probably the biggest change over the last year has been in the level of geopolitical risk. Attempting to measure geopolitical risk is fraught with difficulty, but doing so helps to remove the recency bias that is inevitably attached to the subjective human interpretation of such events and enables like-for-like comparisons with prior periods. The index shown in Figure 3 provides a rough guide to where we sit relative to historical events, with the latest seven-day moving average shown by the blue dot. At 177.4, the index is currently higher than what it averaged through the Cold War, but lower than the averages during the two World Wars and the September 11 peak.

Figure 3: **Geopolitical risk is back**



Source: Data downloaded from Matteo Iacoviello Geopolitical Risk (GPR) Index on 15 November 2023.

5. This was the phrase used to describe Britain's economy from 1955 to 1964 when inflation and concerns about current account induced a lot of policy volatility that resulted in short bursts of growth, followed by periods of slow or no growth.

The conflicts underway in Ukraine and the Middle East are the principal drivers of the level of the index at present. These could ease in intensity going forward and pull the index back down. But we are, in our view, in a world of greater geopolitical risk and uncertainty generally. Part of this is the fading of the post-1989 unipolar world, but the more significant point is that we have entered a period of great-power rivalry between the US and China that is likely to be long-lasting.

This has manifold implications. One aspect is that it is giving rise to greater trade frictions, which are in turn leading to reshoring or friend-shoring. This amounts to a reversal of the global fragmentation of production, which was the essence of globalisation and had been the trend for so long. As Figure 4 shows, this is a growing theme for corporates. Part and parcel of reshoring is the return of industrial strategy to US policymaking (and to the West more generally), evidenced by the CHIPS and Science Act (CHIPS Act) and the Inflation Reduction Act (IRA). As Figure 5 makes clear, this legislation has had a meaningful impact on spending on manufacturing construction in the US.

Figure 4:

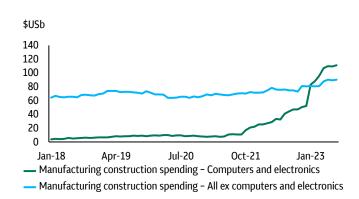
Corporates are talking a lot more about onshoring and reshoring

Number

350
300
250
200
150
100
50
0
2019
2020
2021
2022
2023

• Onshoring/reshoring mentions in corporate transcripts (Russell 3000° Index)

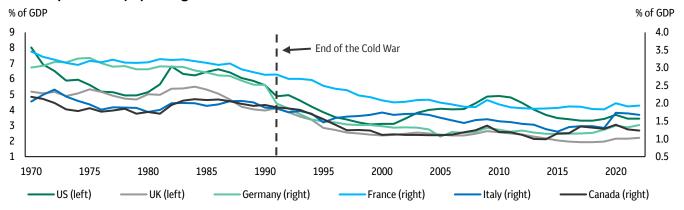
Figure 5: **Policy is also driving re-industrialisation**



Source: Macrobond (November 2023).

Another implication is the impact on fiscal policy. The peace dividend that many countries benefitted from once the Berlin Wall fell (Figure 6) is now likely to reverse. Throughout the Cold War (1947-1991) the G7 countries ex Japan spent an average of 6.8% of GDP on defence. Last year that number stood at 2.8%. Whether or not the world will need to return to Cold War levels of defence spending remains to be seen. But what seems clear is that increasing geopolitical tensions are going to be an additional drag on the fiscal positions of the G7, at the same time as ageing starts to assert its inexorable impact on the level of government spending and debt servicing costs increase.

Figure 6: **G7 ex Japan military spending**



Source: Stockholm International Peace Research Institute (SIPRI) Military Expenditure Database 2023, 30 October 2023.

US economy: Soft landings are hard to do

Throughout 2023 the US economy has proved remarkably resilient, underpinned by strong government spending and a consumer that has not wilted in the face of the headwinds of falling real incomes, higher interest rates, and tighter credit conditions.

Several important factors contributed to this resilience:

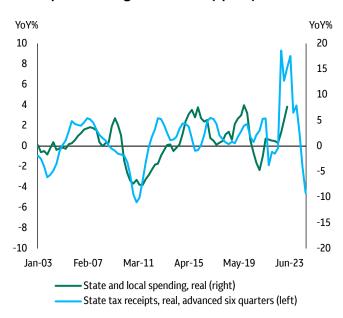
- The war chest of savings consumers built up during the pandemic
- Easier fiscal policy at the state, local, and federal level
- · A mortgage market structure that dilutes the cash-flow impact of higher short-term rates
- A reasonably healthy corporate sector.

Some of these support pillars are durable, but others will likely be weaker in 2024 than they were in 2023. In particular, the savings war chest is now almost completely run down (Figure 7) and state and local government spending is likely to be weaker in 2024 (Figure 8).

Figure 7: Consumers' stockpile of savings has supported spending, but may not going forward

\$USt 2.0 1.8 1.6 1.4 1.2 1.0 0.8 0.6 0.4 0.2 0.0 Feb-20 Apr-21 Jun-22 Aug-23 ■ Bottom quartile ■ 3rd quartile 2nd quartile ■ Top quartile

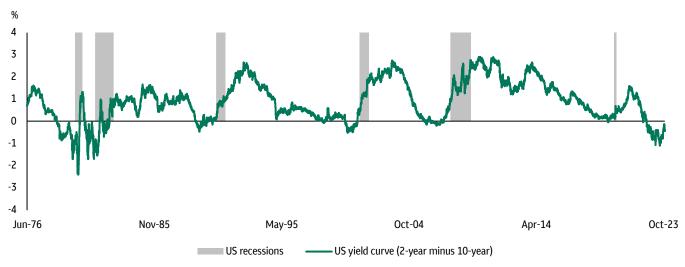
Figure 8: Easier fiscal policy has helped to offset some of the impact from tighter monetary policy in 2023



Source: Macrobond (November 2023).

At the same time, leading indicators are still signalling concern about the growth outlook. The yield curve remains inverted, monetary aggregates have slowed sharply, and credit conditions have tightened. The yield curve first inverted in April 2022, which is 20 months ago now (Figure 9). While this is longer than the post-1980 median of the lag between inversion and recession commencement (of 15 months) it is within the range of historical outcomes over this period (the lag has ranged from five months to 23 months).

Figure 9: **US yield curve inversions often lead recessions**



Source: Macrobond (November 2023).

More broadly, history suggests the odds of a soft landing are low. Throughout most of the post-World War II period, whenever there has been a sharp increase in the federal funds rate it has usually been followed by a recession (Figure 10). There are some exceptions, such as the famous soft landing achieved by US Federal Reserve Chair Alan Greenspan in the mid-1990s, but they are the exception rather than the rule.

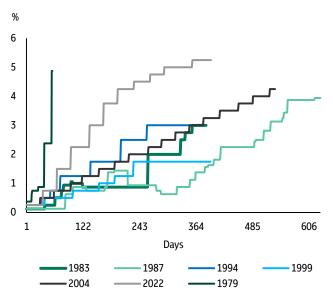
Soft landings are simply hard to do, even if we are, over time, improving both our policymaking skills and our understanding of how economies operate. In addition, this hasn't been a typical tightening cycle. Figure 11 below shows the progression of the policy rate in each of the Fed's major tightening cycles over the past 45 years. The current cycle is much steeper than usual and is, in fact, the sharpest tightening cycle in that period after Fed Chair Paul Volcker's "inflation busting" tightening cycle in 1979.

Figure 10: **Soft landings are hard to do**

%
25
20
15
10
Jan-71
Aug-95
Mar-20
Recessions
Federal funds rate

Source: Macrobond (November 2023).

Figure 11: The sharpest tightening of monetary policy since 1979



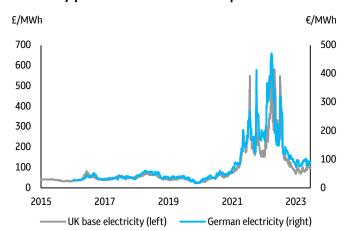
Euro area and UK: From an energy price shock to higher interest rates

Shortly after the commencement of hostilities in Ukraine in February 2022, the reduced supply of gas from Russia to Europe caused energy prices – both natural gas and electricity – to surge (Figures 12 and 13). This impacted households' real incomes and corporates' costs (particularly those in energy-intense industries) and made a significant contribution to the increase in both headline and core inflation (indeed a larger contribution than it did in other regions, such as the US).

Figure 12: Natural gas prices have come back to pre-conflict levels

£/Therm €/MWh 7 350 300 5 250 4 200 3 150 2 100 1 50 0 2015 2017 2019 2021 2023 UK natural gas (left) Dutch TTF daily gas (right)

Figure 13: Electricity prices have come back to pre-conflict levels

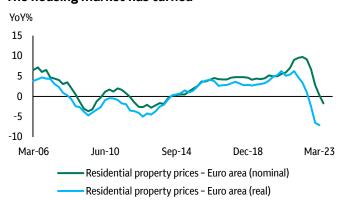


Source: Macrobond (November 2023).

But it was not enough to tip either of these economies into recession – both have largely stagnated since then, with the Euro area economy growing just 0.1% over the past year and the UK economy only 0.6% larger than it was a year ago. Part of the reason a recession was avoided was that the higher energy prices didn't last long – demand destruction, extra imports of liquefied natural gas, high initial storage levels, and a mild winter combined to bring energy prices down and by early 2023 they were back to pre-conflict levels.

But over the past six months, the impact of tighter monetary policy has increasingly been felt. Housing markets have turned down (Figure 14), credit demand has weakened (Figure 15), and corporate investment has slowed. As we look ahead, more of the same seems likely: the headwinds from higher energy prices and inflation will likely continue to fade, while the headwinds from tighter monetary policy are likely to intensify. If these economies did not enter recession in 3Q23, they are likely to in the coming months, in our view.

Figure 14: The housing market has turned



Source: Macrobond (November 2023).

Figure 15:
Credit demand has collapsed



China: Property woes and policy constraints

China's growth has been sluggish for two years now. While there was a surge in 1Q23 on the back of the reopening that followed the removal of COVID-19 restrictions, this strength did not last. For all other quarters since the start of 2022, growth has averaged only 3.2% annualised (Figure 16) which, outside of the COVID-19 period, is the slowest rate of growth for China since the death of Chairman Mao Zedong in 1976 (Figure 17).

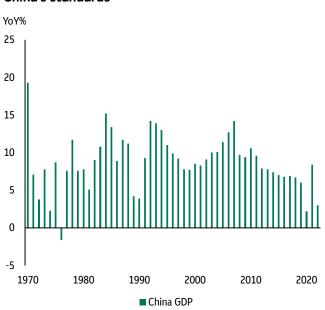
Figure 16: China has experienced weak growth since the start of 2022

QoQ% YoY% 15 25 20 10 15 10 5 5 0 n -5 -5 -10 -15 -10 -20 -15 -25 Mar-08 Jun-13 Dec-23 Sep-18

China GDP YoY

Figure 17:

Recent growth has been extremely weak by China's standards



Source: Macrobond (November 2023). QoQ = quarter on quarter.

China GDP QoQ

The headline problem is the property market, which has been struggling since the beginning of 2022. Prices are down 6.6% from their peak and residential construction activity⁶ has more than halved over the past two years. But the challenges run deeper, in our view. China is increasingly policy constrained, on both the monetary and the fiscal side. Widening interest rate differentials and concern about the resulting capital outflows are limiting the scope for further interest rate cuts, and the weakness in land sales is weighing on local governments' revenues and undermining their fiscal positions. Over the medium term, it also faces formidable demographic challenges and growing trade tensions.

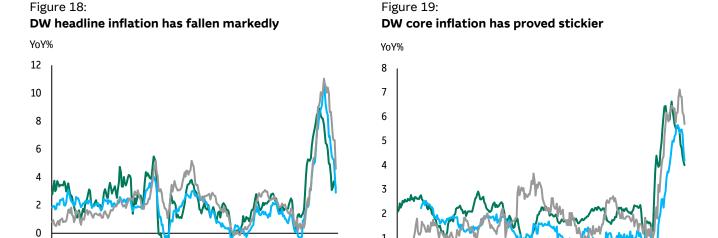
Overall, while some recovery in domestic demand in 2024 seems likely, the policy constraints mean the recovery may not be robust, with GDP growth more likely to be in the 3-5% range rather than north of 5%.

6. As measured by residential construction starts.

Inflation and monetary policy: Sticky core inflation easing, interest rates peaking

Headline inflation across the DW has fallen sharply over the past 12 months (Figure 18). In the US it has tumbled from a peak of 8.9% YoY to 3.2% YoY; in the Euro area it has fallen even further and now stands at 2.9% YoY; in the UK it has fallen from a peak of over 11% YoY in October last year to 4.6% YoY currently. Normalising supply chains, sluggish aggregate demand, and narrowing contributions from energy and food prices have all played a role.

Core inflation has, however, proved much stickier and harder to bring down (Figure 19). Across the DW it remains at more than double central bank inflation targets. Core inflation has a much higher concentration of services, and services inflation has been boosted by strong wages growth, which is in turn a result of tight labour markets.



Source: Macrobond (November 2023).

Dec-05

-US

Nov-11

Euro area

Oct-17

-2

-4

Jan-00

In the near term, both headline and core inflation should continue to moderate. The critical medium-term question is whether services and core inflation will fall far enough fast enough to return underlying inflation to (or below) central bank targets before DW aggregate demand turns around.

Sep-23

1

0 1

Jan-00

Dec-05

Nov-11

Euro area

Oct-17

Sep-23

In our view, there are structural pressures pushing on inflation and we discussed some of these in last year's Outlook: globalisation is clearly slowing down and even reversing in some areas; demographics and the outlook for growth in working age populations is poor across much of the DW; and, perhaps most importantly, productivity growth has deteriorated. Inflation is therefore likely to be slow to return to target, which has two main implications for the next 12-24 months:

- 1. If the recessions are mild (as we expect), we may not see large reductions in policy rates.
- 2. The battle against inflation is not over. Central banks appear to have won the first engagement, but inflation may have additional reserves to bring forth yet.

This said, central banks are, in our view, moving into a phase during which monetary policy is on hold. The aim is to give time for the lagged effects of policy to work their way through the economy and to assess the full extent of the damage to the economic cycle. While the growth-inflation trade-off is less benign than it used to be, and we don't believe large recessions should be investors' base case, the hit to growth that is in the pipe is enough to mean that, for most of the major DW central banks, the next move in policy rates is likely to be down.

The implications for investors and how to potentially position for the year ahead

What does all this mean for investors? And how should they position their portfolios to navigate the uncertainty and cross-currents present in the global economy?

- Bonds are relatively attractive in the current environment, although we prefer those at the low-risk end of the spectrum. With inflation falling, GDP growth slowing, central banks pausing, and not much priced in in terms of interest rate cuts over the coming 12 months or so, we see bonds as good value. In the US, municipal bonds and agency mortgage-backed securities (MBS) also offer a good risk-adjusted return proposition, in our view. Credit spreads are generally not at levels consistent with recessionary conditions, so we are more cautious on credit, particularly higher-risk credit.
- Infrastructure with its defensive traits, its ability to protect against surges in inflation, and its relatively high yield also looks attractive to us. It also has a high exposure to secular growth trends, such as the energy transition and digitalisation.
- Listed equities may face headwinds from the more volatile economic backdrop and the fact that bonds have become a worthwhile alternative again. And while US large-cap stock valuations look stretched, opportunities remain in small-caps and listed real assets. Outside of the US, China and Europe look increasingly attractive on valuation grounds.
- Real estate is challenged by high interest rates and the knock-on effect this has on capitalisation (cap) rates and
 financing costs. The office sector is also facing the headwind of reduced demand as employees continue to prefer
 working from home for part of the week. Logistics and rental housing are better placed, given the underlying
 trends supporting them in the form of ecommerce, demographics, and tightening supply.

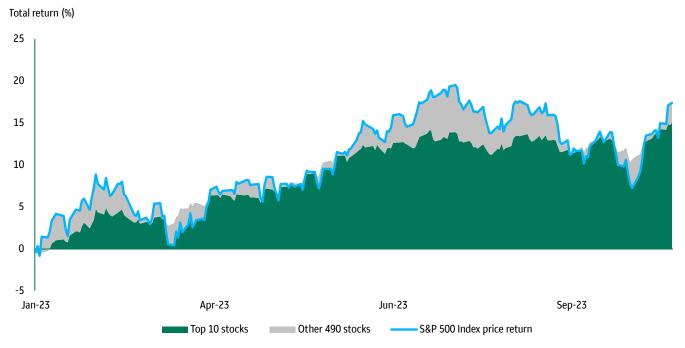
Global listed equities

Searching for value amid market volatility

As referenced on page 6, after the sharp 2022 selloff, 2023 turned out to be a better year for US and global equity markets. A look at performance across regions suggests that US leadership has continued, with benchmarks such as the S&P 500 Index considerably outperforming most other key regional indices on the back of solid earnings growth, despite higher valuations at the beginning of the year.

Within the US equity market, leadership was concentrated in a small number of stocks that had the biggest impact on performance: for most of the year, the 10 largest stocks (including Apple, Microsoft, and Amazon) accounted for virtually all of the US stock market gains (Figure 20). This result was driven in part by the excitement around AI and large language models, but it was also supported by resilient earnings growth.

Figure 20: Performance of the S&P 500 Index in 2023



Source: Macrobond (November 2023).

Growth versus value

These stocks are typically regarded as "growth" stocks, so one might expect 2024 to see a recovery of "value" stocks, as growth-value rotations have often been mean-reverting (Figure 21). Today, growth valuations are clearly more extreme than those of their value counterparts. However, investors should consider that the downside risk to earnings during recessions has historically been more significant for value stocks (Figure 22). They also frequently carry more balance-sheet risk in a "higher-for-longer" yield scenario, given their lower profitability and greater use of leverage.

Figure 21: **Growth-value rotations have been mean-reverting**

%
60
40
20
0
20
40
60
Dec-80
Apr-95
Jun-09
Sep-23
—Growth-value annual return difference

Figure 22:

Value often exhibits greater cyclical earnings risk



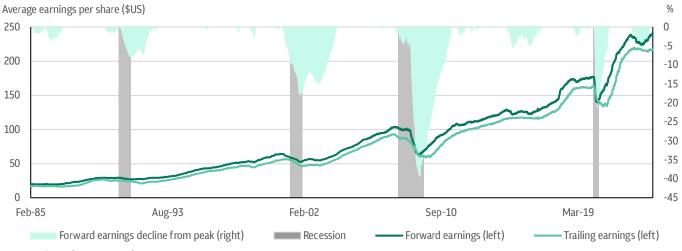
Source: Bloomberg Finance LP (November 2023).

Earnings and recessions

Given the concerns about a potential US recession, it is interesting that the US equity market has started to reprice future earnings expectations. As measured by the next 12 months (NTM) earnings estimates, earnings did decline 5% from their earlier peak but have now fully recovered (Figure 23). We would point out two things:

- 1. During recessions, earnings declines have historically been larger, around -20% in the 2002 and 2020 recessions, and as large as -40% in the 2008 global financial crisis (GFC). If the US economy does enter recession in the coming months it would, therefore, be sensible to expect a bigger earnings decline.
- 2. A full recovery in NTM earnings expectations has often heralded the next phase (or beginning) of a bull market. So if there is no US recession the equity market rally could broaden, supported by strong earnings growth.

Figure 23: Forward earnings have recovered again



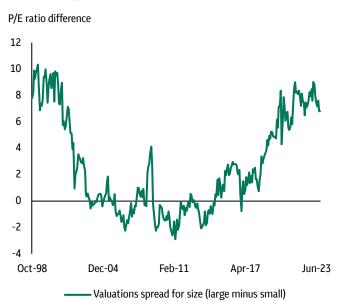
Small-caps versus large-caps

NTM price-to-earnings (P/E) ratios for small-cap stocks are at levels typically seen during a recession, while the largest-cap stocks are trading close to their all-time highs (Figure 24). This makes the valuation spread (the difference in multiple between the largest and smallest quintile) compelling, in our view (Figure 25). In the 2002 and 2008 recessions small-caps outperformed large-caps as the recession started, and also in the early phase of the recovery, creating an interesting asymmetry. The reason back then was similar to today: small-caps priced in recession risks earlier and more significantly.

Figure 24: **P/E ratio by size quintile for the Russell 3000 Index**

P/E ratio (NTM earnings) 25 20 15 10 5 n Sep-98 Dec-04 Mar-11 Jun-17 Sep-23 Quintile 2 Quintile 1 Ouintile 3 Ouintile 4 Ouintile 5

Figure 25: Valuation spread of size factor for Russell 3000 Index



Sources: FactSet, MSCI Barra, Macquarie. Monthly data from 30 September 1998 to 31 October 2023.

Non-US equities and other opportunities

Investors have shied away from China amid the economic uncertainty and real estate market turmoil. However, many of the risks are now well flagged and we may be close to the point of "peak pessimism", making China and emerging markets more broadly a potential opportunity, in our view. Elsewhere, valuations look attractive in Europe and index concentration is low compared to the US, but several risks remain, such as the potential for a shortage of energy supply.

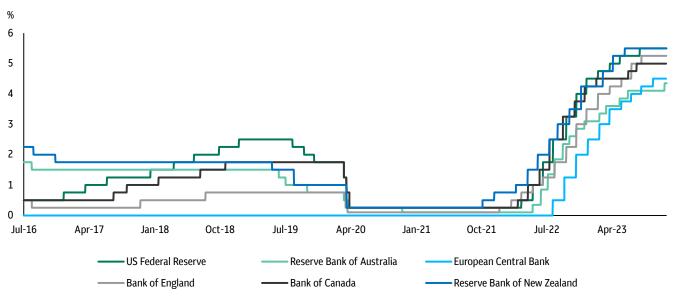
Given our concern about structural higher levels of inflation, or at least more inflation uncertainty, we continue to like listed real assets. Two areas of the market that stand out today are listed infrastructure equities and real estate investment trusts (REITs). Both have come under pressure recently, REITs mostly because of the regional bank defaults earlier this year and their connection to the commercial real estate market. But they are starting to reach levels we view as an attractive entry point. In infrastructure, utilities have been one of the worst-performing subsectors. The knee-jerk reaction in a rising yield environment has been to sell, as utilities are perceived to be a bond-proxy. However, utilities have mechanisms that adjust returns to reflect the higher cost of capital, but those mechanisms can be more complex to understand and take time to be reflected in their bottom lines, creating an investment opportunity today, in our view.

Global debt and credit markets

Patience may be rewarded in 2024

The past two years have proven difficult for fixed income investors (refer to Figure 1), but bond yields are now at their highest levels in more than a decade. With inflation falling, DW economies either on the cusp of recession (UK and Euro area) or facing an uncertain growth outlook (the US), and monetary policy in restrictive territory, it is not surprisingly that central banks are slowing down or pausing their rate hiking cycles (Figure 26). Indeed, as we discussed in the opening section, we believe the world's major central banks are firmly on hold, with the next move in policy rates likely to be down.

Figure 26: **DW policy rates - Significant global monetary policy tightening**



Source: Macrobond (November 2023).

At the same time as the impact of the very sharp monetary policy tightening cycle makes itself fully felt, fiscal policy is set to become a headwind to growth. In addition, credit spreads remain at the lower end of historical ranges and so have the potential to add to the tightening of financial conditions that is likely in 2024.

Public debt market investment implications

The tightness in macroeconomic policy that we see as likely in 2024, combined with restrictive credit conditions, means recession risks are high. Given the yield starting point, this translates to a constructive outlook for bond markets. Our concern about the cyclical outlook also guides us to remain cautious on credit markets, particularly as spreads remain near the lower end of historical ranges.

- **Duration.** With central banks at or near the end of their tightening cycles, we are positive on owning duration given the high carry environment, potential for capital gains if a recession emerges, and as a protective lever within portfolios that contain riskier assets. While shorter-term yields discount the realistic path for monetary policy, we prefer extending into the middle or "belly" of the curve given the dramatic repricing in recent months.
- Credit. Spreads have proven resilient recently and while most companies are prepared for an economic slowdown, current valuations are discounting a more optimistic environment than we are expecting. Thus,

- expected earnings and rating pressure going forward guides for a defensive outlook for credit.
- Emerging markets debt. The challenging global economic environment and persistence of US dollar strength continues to weigh on emerging markets debt. Spreads on hard currency debt remain stable compared with same-rated global credit. Corporates with proactive balance sheet management and reform-minded sovereigns with buffers are favoured, although valuations remain tight. We may look to increase exposure to emerging markets when valuations compensate for the risks.
- Structured securities. Despite on-going challenges from tighter monetary policy and higher bond yields pressuring mortgage rates, we believe the fundamentals for US housing remain solid. As such we have increased our exposure to MBS, especially US agency-backed MBS, which offer attractive spreads backed by robust structures and strong credit fundamentals. Commercial mortgage-backed security (CMBS) spreads remain at historic highs, though the sector continues to face significant challenges.

Private credit: Strong yields plus capital seniority

Private credit, particularly in the investment grade (IG) space, has traditionally been seen as an asset class measured by its ability to generate illiquidity premiums to the public bond market. However, in the current and now expected future high base rate environment investors are discussing the merits of private credit as an alternative to equity. With current yields of around 5-7% available in IG credit and high single-digit to low teens for sub-IG credit, combined with high-certainty cash yield and seniority in the cash flow waterfall, we expect strong investor demand for private credit funds in 2024.

Infrastructure lending and income strip or credit tenant lease financings have proven resilient to the current economic backdrop due to their essential nature and often regulated and inflation-linked characteristics. This has made the risk-return equation particularly attractive for these asset classes. Reduced banking activity in high yield lending is also likely to present opportunities for direct lenders to fill the gap. Financers to direct lending funds (e.g. net asset value (NAV) lending) are likely to benefit from this.

On the borrower side, while merger and acquisition (M&A) activity has remained subdued in 2023, we expect strong refinancing demand in 2024, as many borrowers that have deferred financing activity begin to run out of time. Furthermore, borrowers that entered short-term financings post-COVID-19 will also be closer to maturity.

Financing of growth and capital expenditure (capex) spending will be another area of demand as muted M&A activity has seen sponsors shift to driving value through investing in their existing portfolio companies via organic and inorganic investment. Overall, both demand and supply dynamics are expected to be favourable for private credit in 2024.



We have increased our exposure to MBS, especially US agency-backed MBS, which offer attractive spreads backed by robust structures and strong credit fundamentals."

Figure 27: **Private credit risk-return spectrum**

Returns

Spread: 150-300 basis points

Yield: 5.0%-7.0% Investment grade

Corporate bonds alternative trading liquidity and complexity for higher returns. Strong capital protection and long duration.

Portfolio fit: Fixed income, liability-driven investing (LDI)

Spread: 350-600 basis points **Yield:** 6.5%-10.0%

Sub-investment grade

Higher risk and return than investment grade, but maintaining strong capital protections and generating strong cash yield.

Portfolio fit: Fixed income, alternatives

Spread: 700+ basis points

Yield: 6.5%-10.0%

Mezzanine

Lower risk and return than equity, but with downside protection.

Portfolio fit: Alternatives

Risk

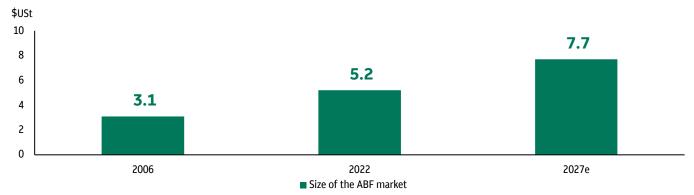
Source: Macquarie Asset Management (November 2023).

Asset-based finance (ABF) funds invest in portfolios of contractual cash flows backed by high-quality collateral (both tangible and financial). Asset classes vary by type and sector and can include financing transportation equipment, providing commercial finance solutions such as receivables or inventory financing, and financing contractual cash flow streams such as sports and entertainment royalties. Funds typically have a majority exposure to senior secured positions but also invest across the capital structure, including mezzanine and equity. This has the potential to provide investors with diversified and attractive risk-adjusted returns. The private ABF asset class was worth \$US5.2 trillion in 2022 (Figure 28). Strong growth is forecast to continue,

with the market expected to grow by an 8% compound annual growth rate (CAGR) to 2027.

Both macroeconomic and industry-specific factors have provided the catalyst for the growth in ABF funds. Additional regulatory requirements, tightening lending standards, and recent market volatility have led to the retreat of traditional lenders from the market and the entry of non-bank financiers. In addition, with the continuing high interest rate environment, investors are seeking private credit solutions that offer high yielding products as an alternative to equity. ABF funds, with their investments in diversified pools of assets targeting low-to-mid-double-digit internal rates of return (IRRs) and high-single-digit yields, provide an avenue for investors seeking attractive incremental returns.

Figure 28: **Size of the ABF market**



Source: KKR Private Credit, "Asset-Based Finance: A Fast-Growing Frontier in Private Credit" (May 2023).

Real assets

Cyclical challenges but positive longer-term drivers

Rising interest rates, tighter credit conditions, and elevated cyclical and geopolitical risks have pushed up the cost of capital and given rise to much greater divergence in performance across real assets. Real estate is more sensitive to higher interest rates than infrastructure, but it has also seen larger price adjustments. While cyclical challenges remain, opportunities for capital deployment are emerging, and both asset classes have robust medium-term drivers.

Infrastructure: A defensive asset class during turbulent times

While infrastructure returns have proved more stable than most other asset classes recently, fundraising and deal flow have slowed in 2023. Looking ahead to 2024, we believe that infrastructure continues to be relatively well placed due to its defensiveness, ability to protect against surges in inflation, relatively high yield, and robust policy support globally. In addition, the secular trends of digitalisation and decarbonisation underpin the long-term growth of the asset class.

Sector and regional leaders emerge amid activity slowdown

With capital scarcer and financing costs higher, private infrastructure fundraising and deal activity have both slowed. After infrastructure funds raised a record \$US175.8 billion of capital in final closes in 2022,7 the asset class raised only \$US11 billion in final closes and \$US45.6 billion in interim closes in 1H23.8 It is worth noting that funds are taking longer to reach a final close. Fundraising activity should be on a stronger footing in 2024, as according to the latest data institutional investors are still underinvested in infrastructure by an average of 98 basis points relative to their target allocations.9 The under allocation is most pronounced in the Americas, where investors are 152 basis points below target, pointing to the potential for an uplift in fundraising activity in the region in the coming year.

In 2023 global infrastructure deal activity witnessed a slowdown, although the dynamics varied by sector, region, and type of transaction. Along the sector dimension, transport and energy midstream experienced the sharpest declines in 1H23, while renewables and energy transition deals exhibited growth of 30% YoY (Figure 29). From a regional perspective, North America emerged as the leader in deal activity in 2023, accounting for nearly 40% of the total transaction value in the first half of the year, surpassing Europe for only the third time in the past two decades. Interestingly, traditional M&A activity declined by 43% YoY, while greenfield projects saw an increase of 13% YoY.

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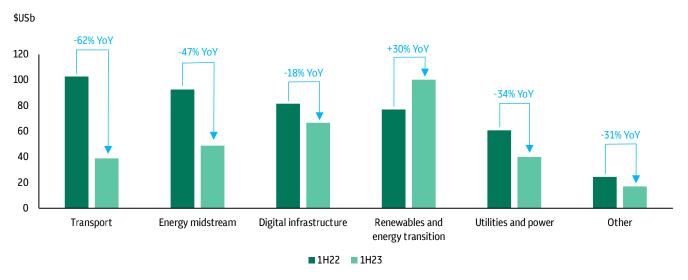
Transport and energy midstream experienced the sharpest declines in 1H23, while renewables and energy transition deals exhibited growth of 30% YoY."

^{7.} Based on Preqin database for calendar year of 2022.

^{8.} Fundraising estimates for interim closes are based on Inframation 2Q 2023 fundraising report.

^{9.} Cornell University's Program in Infrastructure Policy, Hodes Weill & Associates, "The 2023 Institutional Infrastructure Allocations Monitor". The under allocation is most pronounced in the Americas, where institutions are underinvested by around 152 basis points, compared with about 82 basis points in EMEA and around 42 basis points in Asia-Pacific.

Figure 29: Deal activity (including greenfield) has slowed, but investments in renewables and energy transition continue to grow

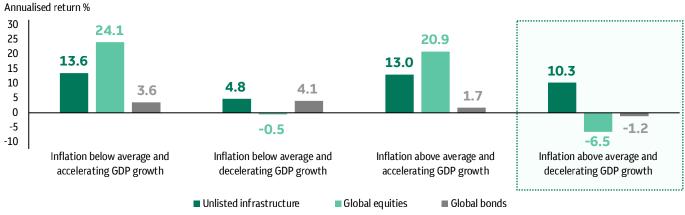


Source: Infralogic by Inframation (June 2023). Deal activity includes greenfield, M&A, take-private and privatisation transactions globally. Excludes commodities, energy upstream and downstream.

Returns are expected to stay resilient relative to other asset classes

In 2022, private infrastructure delivered a total return of 8.1%, above global equities at -17.7% and global bonds at -16.5%, which highlight its defensiveness and the inflation-linked nature of its returns. As of 2Q23, private infrastructure total returns stood at 8.2% YoY. Figure 30 compares the performance of private infrastructure, global equities, and global bonds under different macroeconomic scenarios. In environments where inflation was above average and GDP growth was falling, private infrastructure historically delivered an annualised return of 10.3%, above global equities at -6.5% and global bonds at -1.2%. With this likely to be the macro backdrop in 2024, infrastructure returns are, in our view, likely to remain resilient relative to other asset classes.

Figure 30: Infrastructure has historically exhibited a more stable return profile relative to other asset classes across various economic scenarios



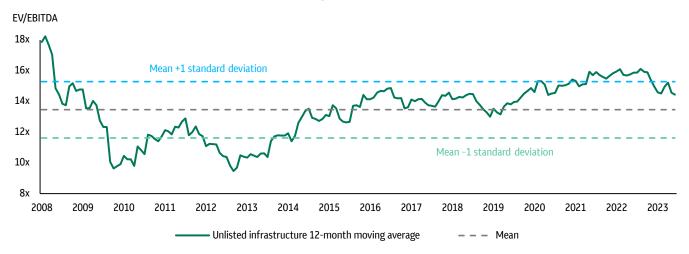
Sources: Macrobond, Cambridge Associates (June 2023). Infrastructure: Cambridge Associates Infrastructure Index; global equities: MSCI World Index; global bonds: Bloomberg Global Aggregate Index. Analysis conducted from 4Q03 to 2Q23. Average inflation over the period was 2.4%.

Latest pricing suggests attractive entry points in the next 12-18 months

Our recent analysis on valuations¹⁰ showed that in 2022 the negative impact from higher interest rates was largely offset by the positive impact of high inflation. However, with inflation cooling down and the market expecting interest rates to stay higher for longer, the direction of travel for valuations may be down over the coming 12-18 months, particularly at the higher risk end of the spectrum.¹¹

Figure 31 shows that the 12-month moving average of enterprise value (EV) / earnings before interest, taxes, depreciation, and amortisation (EBITDA) transaction multiples for private infrastructure deals declined from 15.9x in June 2022 to 14.4x in June 2023. In other words, entry prices have started to normalise. While further declines cannot be ruled out, given that infrastructure has fundamental traits (defensiveness, inflation protection, high yield) that investors should find attractive in the macroeconomic environment that is likely to prevail in 2024 and beyond, we would view any significant move lower as an attractive entry point to acquire infrastructure assets.¹²

Figure 31: **Private infrastructure EV/EBITDA transaction multiples**



Sources: Macquarie Asset Management, Inframation, Bloomberg (June 2023). Analysis is based on 1,097 transaction multiples from January 2008 to June 2023.

Key considerations for infrastructure sectors

The outlook for the transport sector is varied by subsector. For airports, 2023 has been a positive year with a strong traffic recovery and improved profitability despite inflationary pressures eroding households' real incomes. Global air passenger volumes reached 95.7% of the pre-pandemic level in August 2023¹³ and are on track to fully recover in 2024. However, weaker economic growth in China may increase recovery risks in Asia.

For container ports, a combination of normalising goods consumption and de-stocking led to downward pressure on volumes globally in 2023. Global trade volumes declined by 3.2% YoY in July 2023. The decline was broad-based across a large number of countries and a wide array of goods. In 2024 we expect global trade volumes to recover, with growth back into positive territory. For toll roads, higher traffic and toll increases have supported revenue growth over the past year. French and Italian traffic recorded 3% and 5% YoY growth, respectively, in 1H23¹⁶; US traffic growth was 2.4% YoY in August 2023. And average traffic growth in Latin America stood at 8% in 2Q23.

- 10. Pathways report "Private infrastructure valuations: Relative value, macroeconomic drivers and implications for investors" (June 2023).
- 11. This said, if interest rates start to fall our modelling suggests valuations could turn around quickly.
- 12. Please refer to pages 23-26 of the Pathways report "Private infrastructure valuations: Relative value, macroeconomic drivers and implications for investors" (June 2023).
- 13. International Air Transport Association (IATA), "Air Passenger Market Analysis" (August 2023). Note: In revenue passenger kilometres (RPKs).
- 14. Centraal Planbureau (CPB) Netherlands Bureau for Economic Policy Analysis, World Trade Monitor (July 2023).
- 15. World Trade Organisation projects world trade growth at 3.3% in 2024.
- 16. Based on Fitch Ratings (September 2023).
- 17. Based on US Federal Highway Administration monthly vehicle miles travelled (August 2023).
- 18. Based on Fitch Ratings (August 2023).

For renewables, growth continues to be driven by strong policy support. In October 2023, the European Council adopted the new Renewable Energy Directive (RED III) raising the target of renewable energy in gross final energy consumption to 42.5% by 2030, up from 32%.19 In the US, \$US349 billion in utility-scale clean energy investments have been announced since the signing of the IRA into law in 2022.20 However, despite the largest ever absolute increase in global renewable capacity in 2023, the expansion by technology was uneven and may remain so in 2024. Solar photovoltaic additions continue to increase, supported by record low module prices, but wind faces a number of challenges. Global onshore wind additions may fall by 5% next year²¹ due to turbine cost inflation, undersubscription of auctions, and permitting delays. While permitting delays are being addressed through legislation such as RED III, cost risks may continue to create uncertainty for developers.

In the regulated utilities space, we expect regulatory frameworks to continue underpinning predictable cash flows. In much of Europe and Australia, a regulated asset base (RAB) model insulates regulatory revenues from volume exposure. For electricity transmission and distribution, there is growing pressure on grids to expand and adapt to rapid renewables expansion and demand pattern shifts,²² which is likely to lead to RAB growth. All that said, the outlook for regulated utilities is being challenged by the current level of bond yields. In the past, when bond yields were very low, many debt investors moved into this defensive end of the infrastructure equity spectrum for the yield pickup. With bond yields now much more attractive, regulated utilities' relative yield allure is commensurately less.

With at least 3,000 gigawatts (GW) of renewable power projects waiting in grid connection queues, large amounts of capex are required for electricity networks, with investment estimated to nearly double by 2030 to over \$US600 billion per year.²³ Grid operators generally benefit from rising interest rates as the return on investment allowed typically factors in a weighted average cost of capital (WACC). However, there can be a time lag between investment and the regulatory period reset, creating risks in jurisdictions

where the framework remunerates using low risk-free rate assumptions, while new projects are financed at higher rates.

Within digital infrastructure, the outlook also varies by subsector. In the near term, data centres should continue to enjoy demand tailwinds. The mismatch between strong demand and limited supply due to higher build and operational costs led to stronger pricing power for existing operators, which is likely to continue into 2024 as supply-demand imbalances persist. In the medium term, data centres should benefit from strong secular trends, including the need to meet new Al requirements and to reduce latency, driving the demand for edge data centres outside of core markets. At the same time, the risks have risen for wireline infrastructure. Fiber-to-the-home (FTTH) deployments have slowed down in both Europe and the US due to the higher costs of building and operating a fiber network, including labour, resources, and borrowing costs. Given generally high leverage and exposure to floating-rate debt in the sector, the pace of FTTH builds may slow down further in 2024.24



Given that infrastructure has fundamental traits (defensiveness, inflation protection, high yield) that investors should find attractive in the macroeconomic environment that is likely to prevail in 2024 and beyond, we would view any significant move lower as an attractive entry point to acquire infrastructure assets."

^{19.} The Council of the European Union, press release, "Renewable energy: Council adopts new rules" (9 October 2023). Member states will have 18 months after the entry into force of the directive to transpose it into national legislation.

^{20.} American Clean Power Association (October 2023). The investment announced during this period is equivalent to 11 years' worth of American clean energy investment, surpassing total investment into US clean power projects commissioned between 2012 and 2022.

^{21.} International Energy Agency (IEA), "Renewable Energy Market Update" (June 2023).

^{22.} This refers to growing AC demand in warm climates, growing electricity demand for heat pump heating in cold climates, EVs and industrial electrification in the electric sector and potential readying of gas utilities for handling hydrogen or hydrogen blends.

^{23.} IEA, "Electricity Grids and Secure Energy Transitions" (October 2023).

^{24.} S&P Global Industry Top Trends Midyear 2023 (July 2023).

Property: Divergence by sector

All major property sectors are sensitive to interest rates and the recent increase in risk-free rates globally has given rise to sizeable pricing adjustments. On the supply side, softening construction starts across many property types and markets is set to continue into 2024, helping to offset any cyclical demand softness. Finally, several sectors are supported by long-term structural drivers related to demographics (housing, healthcare), digitalisation (data centres, life sciences, premium offices) and deglobalisation (supply chains and logistics). Of the main sectors our preference is for rental housing and logistics. Office is more challenged, but could see repositioning and repurposing opportunities emerge in 2024.

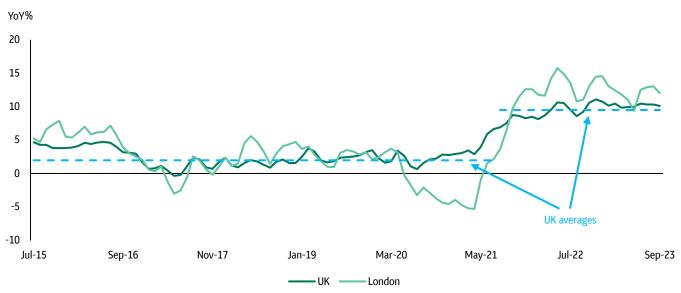
Living sector's resilient demand and cash flows

Globally, rental housing demand is set to remain solid over the medium term, creating opportunities for investors who are looking to boost their "living" sector exposure, though drivers and growth patterns differ across markets. On the development front, new supply is likely to remain constrained for the next 12-18 months if construction costs and financing rates remain elevated. Sticky demand and falling supply should support rents and occupancy rates over the medium term.

Figure 32: **UK rents have been growing strongly**

Demographic shifts and affordability constraints are also creating subsector opportunities such as larger apartments and single-family rentals for millennials (those born between 1981 and 1994), affordable housing products for key workers (e.g. US manufactured homes), and amenity-rich residential communities for retiring downsizers (e.g. Australia's land lease communities sector).

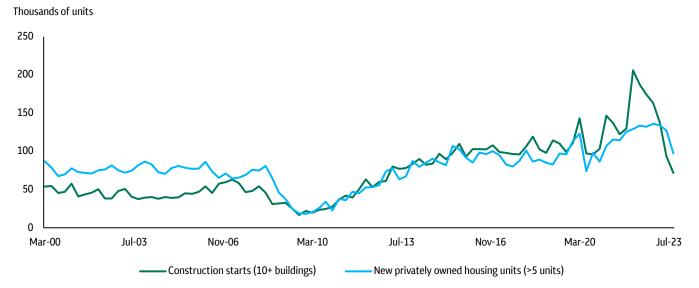
The combination of high migration, demographics, elevated mortgage rates, and stretched affordability for purchase continue to support strong demand for rental housing across subsectors in the UK and Australia, including in the build-to-rent (BTR) sector. Indeed, rental growth has stepped up a level in recent years, as Figure 32 shows for the UK. Private rents for new lettings are expected to grow well above wages into 2024, with broader Consumer Price Index (CPI) rental measures gradually catching up as leases are reset at market rates. Generally, on-going strong rental growth and occupancy assumptions continue to support pricing relative to other sectors and markets. Longer term, rents are expected to grow in line with wages as affordability issues cap growth, helping to minimise any further regulatory scrutiny.



Source: Macrobond (October 2023).

In other markets, elevated US multifamily supply growth – particularly at the higher end of the market – is set to constrain asking rents into 2024, with vacancy rates remaining above average. Nonetheless, higher cap rates and stabilising demand are creating better entry points for those investors who are looking to boost their exposure or were simply priced out of the market during COVID-19. A sharp pullback in multifamily starts into 2024 (Figure 33) should provide some relief to vacancy rates over the medium term as the current pipeline is absorbed.

Figure 33: US construction starts have turned down, potentially tightening supply



Sources: CoStar, US Federal Reserve Economic Data (FRED) database (October 2023).

Shifting logistics demand drivers in a post-COVID-19 environment

The logistics sector is likely to remain one of the more liquid asset classes in 2024, and recent capital market volatility is creating potential opportunities for capital deployment for investors seeking to build exposure to the sector, with market yields for new developments expanding to 5.5-6.0% in the US (from cyclical lows of 3.5-4.0%) and 5% or greater in the UK (from 3.5%), according to data from Green Street and Property Market Analysis (PMA).

Refinancing and redemption events are triggering sales of industrial facilities, despite their solid fundamentals. The turnaround from the tight pricing and low cap rates during the COVID-19 period is providing opportunities for new investment in a sector that is still seeing healthy rental growth and demand relative to other core sectors. With many investors underweight logistics in recent years, exacerbated by strong price performance, the current capital market volatility provides a window to rebalance.

Changing consumer behaviour and rising online sales are not the only factors driving logistics demand. Businesses are increasingly facing up to the risks that geopolitical tensions pose to their supply chains and operations and are reducing exposure to any single supplier or market. This gradual retooling of Western supply chains alongside near-shoring and shifting trade patterns, supported by governments seeking to diversify their supply chains, will be an important driver of growth in logistics going forward.



Figure 34: US core logistics - Returns and interest rates

Sources: Green Street, Bloomberg Finance LP (October 2023).

Office repositioning and repurposing opportunities

Polarisation remains a key theme in office markets, with occupiers focused on high-quality, amenity-rich buildings in locations with good transport linkages. These buildings command significant and rising rent premiums, which is helping to buttress the capital decline of the broader office sector. Newly developed and redeveloped offices in the right locations will continue to gain the attention of tenants given their layouts that are suitable for the use of technology in the workplace, against the backdrop of broader digitalisation trends. Demographics are also an underappreciated driver in this respect, as millennials become the dominant age group in labour markets, driving corporate fit-out strategies, location preferences, and post-pandemic work-life practices.

European regulations are also likely to aid the prime office story over the coming decade as older assets are withdrawn and tenants "right-size" their spacing requirements by focussing on the best buildings. This dynamic is already playing out in the central London market where mixed-use property submarkets and high-quality buildings near transport linkages are achieving the highest rents and occupancy rates, creating opportunities to reposition older buildings in good locations.



Higher cap rates and stabilising demand are creating better entry points for those investors who are looking to boost their exposure or were simply priced out of the market during COVID-19."



Who we are

Macquarie Asset Management (MAM) is a global asset manager, integrated across public and private markets. Trusted by institutions, governments, foundations and individuals to manage approximately \$A892 billion in assets, we offer a diverse range of investment capabilities including real assets, real estate, credit, equities and multi-asset solutions.

Macquarie Asset Management is part of Macquarie Group, a diversified financial group providing clients with asset management, finance, banking, advisory, and risk and capital solutions across debt, equity and commodities. Founded in 1969, Macquarie Group employs approximately 21,000+ in 34 markets and is listed on the Australian Securities Exchange.

All figures as at 30 September 2023.



Ben Way

Group Head, Macquarie Asset Management

Ben is Group Head of Macquarie Asset Management (MAM) and a member of Macquarie Group's Executive Committee.

Before assuming his current responsibilities in 2021, Ben held several other senior positions across Macquarie, including CEO of Macquarie Group in Asia. Prior to joining the firm, he was Chairman and CEO of Taiwan Broadband Communications and a Management Consultant with Bain & Company.

Ben is a member of the Board of Directors of Mother's Choice, a Hong Kong organization whose goal is to see every child in a safe, loving, and permanent family.

Ben is a Fellow of the 2017 class of the Finance Leaders Fellowship and a member of the Aspen Global Leadership Network. He holds a Bachelor of Law and a Bachelor of Arts from Macquarie University, Sydney.



Daniel McCormack

Head of Research

Daniel leads MAM's Research Team, which produces research on real assets, listed equity and listed debt markets, and the energy transition. The team also provides regular macroeconomic views to clients and the firm's investment teams and oversees the economic forecasts and assumptions that go into the firm's acquisitions and asset management activities.

Daniel regularly appears in the media, including on Bloomberg, BBC, and CNBC, and he publishes articles in leading industry publications.

Prior to joining the firm, he spent 10 years as a sell-side equity market strategist and economist in London, Hong Kong, and Sydney.

Daniel has a Bachelor of Economics (Honours) from the University of Queensland, Australia, and a Bachelor of Laws degree from the Queensland University of Technology. He holds the Chartered Financial Analyst® designation.



David Roberts

Head of Real Estate Strategy

David is the Head of Real Estate Strategy for MAM, producing property research across major global markets and sectors for external and internal clients, including Macquarie Group's Board.

Previously, he was a member of UBS Asset
Management's Real Estate Team, where he was
the Head of Real Estate Research for Asia Pacific,
responsible for formulating market views and strategies
for the Direct Real Estate and Multi-Manager businesses.
Prior to that, David was the UK Head of Research
at Grosvenor and worked as an Economist at the
Australian Treasury.

David holds a Bachelor of Economics from the University of Queensland, a Master of Economics/ Econometrics from the Australian National University, and an IPF Diploma in Property Investment.



Aizhan Meldebek

Global Infrastructure Strategist

Aizhan is a Global Infrastructure Strategist for MAM. In this role, she produces insights on the asset class performance of agriculture and infrastructure, including power, transport, energy, and digital infrastructure. Aizhan works on analysing and monitoring key market trends in these sectors, with a particular focus on the impact of changing economic cycles.

Prior to joining the firm, Aizhan worked as a research analyst for private infrastructure markets at DWS (Deutsche Bank).

Aizhan has a Bachelor of Science (First Class Honours) in economics and statistics from the University of St Andrews, UK, and she holds the Chartered Alternative Investment Analyst designation.



Graham McDevitt

Global Fixed Income Strategist

Graham is a Global Strategist for MAM's Fixed Income investment strategies, leading the macro strategy for the Fixed Income and Quant Teams. In this role, he is responsible for providing analysis of the global macroeconomic trends, policy frameworks, and geopolitical environment to advise portfolio managers about the current investment climate and drivers of its evolution in the future.

Graham has 40 years of relevant experience. Before joining Macquarie, he spent eight years in various senior positions at ABN Amro, including Global Head of Financial Markets Research, managing research teams in the UK, Europe, US, and Australia. Before that, he spent time at Paribas and IDEA in London, having started his career at the NSW Treasury, including a year secondment to the Treasurer.

Graham holds a Master of Commerce in Economics from the University of New South Wales.



Patrick Er

Economist

Patrick is a Senior Econometrician in the Global Fixed Income Markets and Quantitative Research Team within MAM Credit, a role he assumed in 2019. He specialises in econometric research and is responsible for developing and refining Fixed Income's investment processes for all cash, fixed interest, and currency solutions. Patrick is also responsible for econometric modelling across a range of fixed income and currency investment strategies.

Patrick has 30 years of industry experience. Prior to joining Macquarie, he worked in Westpac's Financial Markets Division and spent eight years at Commerce International Merchant Bank in Malaysia, including five years as Head of Economics Research.

He has a Master of Commerce in Economics from Auckland University and a Bachelor of Social Science (Honours) from Waikato University.



John Pickard

Chief Investment Officer - Equities & Multi-Asset

John is Chief Investment Officer of Equities & Multi-Asset for MAM. He leads MAM's global equities and multi-asset business, with overall responsibility for performance and governance of the individual boutiques, and for the centralised investment platform, including trading, risk management, sustainability, and product development.

John has 35 years of global equity portfolio management experience. Most recently he was a partner at h2glenfern in London, leading the firm's environmental, social, and governance (ESG) practice and supporting the growth of the firm's capital markets advisory business across Europe. Prior to that, he was the Chief Investment Officer at Martin Currie Investment Management in Edinburgh, after initially spending over 20 years with UBS Asset Management. There he was responsible for leading the firm's institutional and wholesale equity platform within multiple markets, first as Head of Asian and Emerging Market Equities in London and Tokyo, and later as European Head of Equities in Zurich.

He earned a Bachelor of Arts in natural sciences from Oriel College, Oxford University.



Derek Hamilton

Economist

Derek is an Economist for MAM, where he focuses on the Ivy Equity Boutique. He brings important insights and thought leadership to the firm's investment professionals.

He joined Ivy Investments as an Economic Analyst. He became an International Analyst in 2000, specializing in foreign currencies and international economics. He was appointed International Economist in 2007 and was appointed Global Economist in 2010, before assuming his current role in 2021.

Derek earned a Bachelor of Arts in finance and economics and a Master of Business Administration in finance and management from Rockhurst College. He is a member of the CFA Institute, CFA Society of Kansas City, and the National Association for Business Economics.



Stefan Löwenthal

Head of Global Multi-Asset

Stefan is the Chief Investment Officer for the Global Multi-Asset Team at MAM. The team has engineered multi-asset solutions for more than 25 years. With its highly differentiated investment process, the team serves clients around the globe. He leads the team responsible for asset allocation and portfolio construction; the management of multi-asset funds, model portfolios, and institutional accounts; and the development of new multi-asset investment strategies. He oversees all research, portfolio management, and thought leadership activities of the team.

Stefan joined Macquarie in February 2008 as a Portfolio Manager on the Global Multi-Asset Team. He was appointed Chief Investment Officer for the team in 2013.

He chairs the MAM Investment Policy Committee and is a member of the MAM Environmental, Social, and Governance (ESG) Working Group, the MAM Professional Series Multi Manager Committee, and the MAM Private Infrastructure Fund Governance Committee.

He is a frequent speaker at industry events and universities. Stefan received a Master of Management Science from the Vienna University of Economics and Business. He holds the Chartered Financial Analyst® designation and is a member of the CFA Society Austria.

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Diversification may not protect against market risk

Fixed income securities and bond funds can lose value, and investors can lose principal, as interest rates rise. They also may be affected by economic conditions that hinder an issuer's ability to make interest and principal payments on its debt. This includes prepayment risk, the risk that the principal of a bond that is held by a portfolio will be prepaid prior to maturity at the time when interest rates are lower than what the bond was paying. A portfolio may then have to reinvest that money at a lower interest rate.

Market risk is the risk that all or a majority of the securities in a certain market - like the stock market or bond market - will decline in value because of factors such as adverse political or economic conditions, future expectations, investor confidence, or heavy institutional selling.

International investments entail risks including fluctuation in currency values, differences in accounting principles, or economic or political instability. Investing in emerging markets can be riskier than investing in established foreign markets due to increased volatility, lower trading volume, and higher risk of market closures. In many emerging markets, there is substantially less publicly available information and the available information may be incomplete or misleading. Legal claims are generally more difficult to pursue.

Currency risk is the risk that fluctuations in exchange rates between the US dollar and foreign currencies and between various foreign currencies may cause the value of an investment to decline. The market for some (or all) currencies may from time to time have low trading volume and become illiquid, which may prevent an investment from effecting positions or from promptly liquidating unfavourable positions in such markets, thus subjecting the investment to substantial losses.

Credit risk is the risk of loss of principal or loss of a financial reward stemming from a borrower's failure to repay a loan or otherwise meet a contractual obligation. Credit risk arises whenever a borrower expects to use future cash flows to pay a current debt. Investors are compensated for assuming credit risk by way of interest payments from the borrower or issuer of a debt obligation. Credit risk is closely tied to the potential return of an investment, the most notable being that the yields on bonds correlate strongly to their perceived credit risk.

Liquidity risk is the possibility that securities cannot be readily sold within seven days at approximately the price at which a fund has valued them.

IBOR risk is the risk that changes related to the use of the London interbank offered rate (LIBOR) or similar rates (such as EONIA) could have adverse impacts on financial instruments that reference these rates. The abandonment of these rates and transition to alternative rates could affect the value and liquidity of instruments that reference them and could affect investment strategy performance.

REIT investments are subject to many of the risks associated with direct real estate ownership, including changes in economic conditions, credit risk, and interest rate fluctuations. A REIT fund's tax status as a regulated investment company could be jeopardized if it holds real estate directly, as a result of defaults, or receives rental income from real estate holdings.

Investment strategies that hold securities issued by companies principally engaged in the infrastructure industry have greater exposure to the potential adverse economic, regulatory, political, and other changes affecting such entities.

Infrastructure companies are subject risks including increased costs associated with capital construction programs and environmental regulations, surplus capacity, increased competition, availability of fuel at reasonable prices, energy conservation policies, difficulty in raising capital, and increased susceptibility to terrorist acts or political actions.

Natural or environmental disasters, such as earthquakes, fires, floods, hurricanes, tsunamis, and other severe weather-related phenomena generally, and widespread disease, including

pandemics and epidemics, have been and can be highly disruptive to economies and markets, adversely impacting individual companies, sectors, industries, markets, currencies, interest and inflation rates, credit ratings, investor sentiment, and other factors affecting the value of the Strategy's investments. Given the increasing interdependence among global economies and markets, conditions in one country, market, or region are increasingly likely to adversely affect markets, issuers, and/or foreign exchange rates in other countries. These disruptions could prevent the Strategy from executing advantageous investment decisions in a timely manner and could negatively impact the Strategy's ability to achieve its investment objective. Any such event(s) could have a significant adverse impact on the value and risk profile of the Strategy.

The compound annual growth rate (CAGR) is the rate of return that would be required for an investment to grow from its beginning balance to its ending balance, assuming the profits were reinvested at the end of each period of the investment's life span.

A cost-of-living adjustment (COLA) is an increase in Social Security benefits to counteract inflation

Deglobalisation is the process of diminishing interdependence and integration between certain units around the world, typically nation-states.

Demand deceleration is when growth slows relative to the prior period, and "demand destruction" is when growth contracts relative to the prior period (i.e. a period of negative growth).

EBITDA, or earnings before interest, taxes, depreciation, and amortisation, is an alternate measure of profitability to net income. By including depreciation and amortisation as well as taxes and debt payment costs, EBITDA attempts to represent the cash profit generated by the company's operations.

Enterprise multiple, also known as the EV multiple, is a ratio used to determine the value of a company. The enterprise multiple, which is enterprise value divided by EBITDA, looks at a company the way a potential acquirer would by considering the company's debt. What's considered a "good" or "bad" enterprise multiple will depend on the industry.

The global financial crisis (GFC) refers to the period of extreme stress in global financial markets and banking systems between mid-2007 and early 2009.

Gross domestic product (GDP) is a measure of all goods and services produced by a nation in a year. It is a measure of economic activity.

Inflation is the rate at which the general level of prices for goods and services is rising, and, subsequently, purchasing power is falling. Central banks attempt to stop severe inflation, along with severe deflation, in an attempt to keep the excessive growth of prices to a minimum.

The internal rate of return (IRR) is a metric used in financial analysis to estimate the profitability of potential investments. IRR is a discount rate that makes the net present value (NPV) of all cash flows equal to zero in a discounted cash flow analysis

Net asset value (NAV) is the net value of an investment fund's assets less its liabilities, divided by the number of shares outstanding. Most commonly used in the context of a mutual fund or an exchange-traded fund (ETF), NAV is the price at which the shares of the funds registered with the US Securities and Exchange Commission (SEC) are traded.

Quantitative easing (QE) is a form of monetary policy in which a central bank, like the US Federal Reserve, purchases securities from the open market to reduce interest rates and increase the money supply.

Quantitative tightening (QT) refers to when central banks raise interest rates. In a tightening monetary policy environment, a reduction in the money supply is a factor that can significantly help to slow or keep the domestic currency from inflation

Recession is a period of temporary economic decline during which trade and industrial activity are reduced, generally identified by a fall in GDP in two successive quarters.

Return on assets (ROA) refers to a financial ratio that indicates how profitable a company is in relation to its total assets.

A sector is a segment of the economy that includes companies providing the same types of products or services. Although companies within a sector tend to be reasonably consistent in their fundamentals, these fundamentals may differ substantially from one sector to another. For example, some sectors are cyclical, rising and falling with changes in the economy while others are defensive, maintaining their strength despite economic ups and downs.

A Treasury yield refers to the effective yearly interest rate the US government pays on money it borrows to raise capital through selling Treasury bonds, also referred to as Treasury notes or Treasury bills depending on maturity length.

Valuation spread is the difference between the median next 12-month price-to-earnings ratio of the highest quintile of size factor exposure minus the lowest quintile of size factor exposure of stocks in the Russell 3000 Index, sector neutral.

Weighted average cost of capital (WACC) represents a company's average after-tax cost of capital from all sources, including common stock, preferred stock, bonds, and other forms of debt. As such, WACC is the average rate that a company expects to pay to finance its business.

The yield curve is a line that plots the interest rates, at a set point in time, of bonds having equal credit quality, but differing maturity dates. The most frequently reported yield curve compares the 3-month, 2-year, 5-year, and 30-year US Treasury debt. This yield curve is used as a benchmark for other debt in the market, such as mortgage rates or bank lending rates. It is also used to predict changes in economic output and growth.

The shape of the yield curve is closely scrutinized because it helps to give an idea of future interest rate change and economic activity. There are three main types of yield curve shapes: normal, inverted and flat (or humped). A normal yield curve is one in which longer maturity bonds have a higher yield compared to shorter-term bonds due to the risks associated with time. An inverted yield curve is one in which the shorter-term yields are higher than the longer-term yields, which can be a sign of upcoming recession. A flat (or humped) yield curve is one in which the shorterand longer-term yields are very close to each other, which is also a predictor of an economic transition. The slope of the yield curve is also seen as important: the greater the slope, the greater the gap between short- and long-term rates.

Yield curve inversion is when coupon payments on shorter-term Treasury bonds exceed the interest paid on longer-term bonds.

The **Bloomberg Global Aggregate Index** provides a broad-based measure of the global investment grade fixed-rate debt markets.

The Caldara and lacoviello Geopolitical Risk (GPR) Index reflects automated text-search results of the electronic archives of 10 newspapers: Chicago Tribune, the Daily Telegraph, Financial Times, The Globe and Mail, The Guardian, the Los Angeles Times, The New York Times, USA Today, The Wall Street Journal, and The Washington Post. Caldara and lacoviello calculate the index by counting the number of articles related to adverse geopolitical events in each newspaper for each month (as a share of the total number of news articles).

The Cambridge Associates LLC Infrastructure Index is a horizon calculation based on data compiled from 93 infrastructure funds, including fully liquidated partnerships, formed between 1993 and 2015. Private indexes are pooled horizon internal rate of return (IRR) calculations, net of fees, expenses, and carried interest.

The **Consumer Price Index (CPI)** is a measure of inflation representing changes in prices of goods and services purchased for consumption by households.

The MSCI EAFE (Europe, Australasia, Far East) Index represents large- and mid-cap stocks across 21 developed markets, excluding the US and Canada: Australia, Austria, Belgium, Denmark, Finland, France, Germany, Hong Kong, Ireland, Israel, Italy, Japan, the Netherlands, New Zealand, Norway, Portugal, Singapore, Spain, Sweden, Switzerland, and the UK. The index covers approximately 85% of the free float-adjusted market capitalization in each country. Index "net" return approximates the minimum possible dividend reinvestment, after deduction of withholding tax at the highest possible rate.

The MSCI Emerging Markets Index represents large- and mid-cap stocks across 24 emerging market country indices: Brazil, Chile, China, Colombia, Czech Republic, Egypt, Greece, Hungary, India, Indonesia, Korea, Kuwait, Malaysia, Mexico, Peru, The Philippines, Poland, Qatar, Saudi Arabia, South Africa, Taiwan, Thailand, Turkey, and the United Arab Emirates. The index covers approximately 85% of the free float-adjusted market capitalization in each country. Index "net" return approximates the minimum possible dividend reinvestment, after deduction of withholding tax at the highest possible rate.

The **MSCI World Index** represents large- and midcap stocks across 23 developed market countries worldwide. The index covers approximately 85% of the free float-adjusted market capitalization in each country. The **Purchasing Managers' Index (PMI)** is an indicator of the economic health of the manufacturing sector. A PMI reading above 50% indicates that the manufacturing economy is generally expanding; below 50% indicates that it is generally contracting.

The **Russell 3000 Index** measures the performance of the largest 3,000 US companies, representing approximately 98% of the investable US equity market.

The **S&P 500 Index** measures the performance of 500 mostly large-cap stocks weighted by market value and is often used to represent performance of the US stock market.

Index performance returns do not reflect any management fees, transaction costs or expenses. Indices are unmanaged and one cannot invest directly in an index.

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mammktgcoms@macquarie.com