Invesco

The Big Picture

Global Asset Allocation 2022 Q4

Quarterly update from Invesco's Global Market Strategy Office
20 September 2022

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Global Asset Allocation 2022 Q4

Yields have again risen on all assets but we think this is largely compensating for greater policy/recession risk (we think we are in the contraction phase of the cycle). We boost cash to further Overweight, while reducing equities to further Underweight within our Model Asset Allocation. The relatively conservative stance within the Model Asset Allocation is balanced by having a regional bias towards emerging market (EM) assets. We think the dollar is expensive but are not hedging our USD exposure as we are Underweight US assets.

Model asset allocation

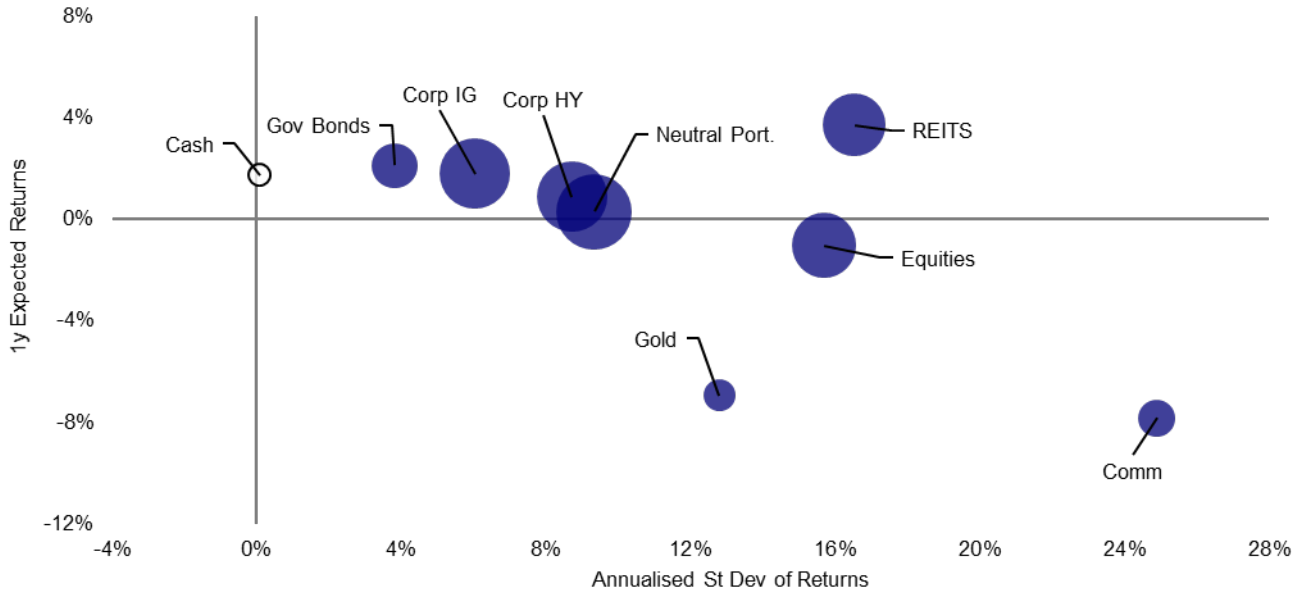
In our view:

- Government debt outlook is improved by the sharp rise in yields. We remain Overweight.
- Real estate (REITS) offers the best returns. We remain Overweight.
- Equities are handicapped by the growing threat of recession. We go further Underweight.
- Corporate investment-grade (IG) yields have risen but spreads may widen further. We remain Overweight.
- Corporate high-yield (HY) may suffer wider spreads and higher defaults. We remain at zero.
- Cash rates are higher and offer diversification. We go further Overweight.
- Commodities are expensive and cyclical. We remain at zero.
- Gold still appears expensive, despite recent weakness. We remain at zero.
- Regionally, we favour EM assets.

Our best-in-class assets (based on 12m projected returns)

- EM government bonds
- Europe ex-UK real estate
- Chinese equities
- USD cash

Figure 1 – Projected 1-year returns for global assets and neutral portfolio



Based on annualised local currency returns. Returns are projected but standard deviation of returns is based on 5-year historical data. Size of bubbles is in proportion to average pairwise correlation with other assets. Cash is an equally weighted mix of USD, EUR, GBP and JPY. Neutral portfolio weights shown in Figure 3. As of 31 August 2022. **There is no guarantee that these views will come to pass**. See Appendices for definitions, methodology and disclaimers. Source: BAML, MSCI, GSCI, FTSE, Refinitiv Datastream and Invesco

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Summary and conclusions: contraction phase => more cash and less equities

We add to cash and reduce equities

Yields have again risen on all assets but we think this is largely compensating for greater policy/recession risk (we think we are in the **contraction** phase of the cycle). We boost cash to further Overweight, while reducing equities to further Underweight within our Model Asset Allocation. The relatively conservative stance within the Model Asset Allocation is balanced by having a regional bias towards emerging market (EM) assets. Though we think the US dollar is expensive, we are not hedging our USD exposure as we are Underweight US assets.

Yields are up a lot and recession risks are growing

Yields have risen on all assets since we last wrote (see **Figure 5**) but we think this is balanced by the risks posed by aggressive central banks and recession. Given negative excess monetary growth and central bank quantitative tightening we fear that asset returns will remain limited over the next 12 months. We think we are in the contraction phase of the cycle, which has historically favoured defensive assets.

Underlying assumptions

Underpinning our projections for the next 12 months are the following assumptions:

- Global GDP growth slips to 2% with some economies in recession
- Global inflation will fall but remain above many central bank targets
- The Fed, ECB and BOE hike aggressively; rates peak in 2023 H1 (PBOC loosens)
- Long-term government bond yields peak and yield curves flatten
- Credit spreads widen and defaults rise
- Equity dividend growth moderates and equity yields rise slightly
- Real estate (REIT) dividend growth moderates and yields rise slightly
- Commodities struggle as global economy slows (except agricultural products)
- USD weakens as Fed tightening ends

Western central banks to remain aggressive

The full set of assumptions are shown in **Appendix 4**, while the resultant market targets are shown in **Figure 39** and projected returns for global assets are shown in **Figure 2**. Perhaps the most striking feature of the forecasts is that we now expect major central banks (Fed, ECB and BOE) to continue tightening aggressively, perhaps into the first half of 2023. As well as having a direct depressing effect upon financial asset returns, we think this also increases the risk of recession at a time when economies are already struggling due to the squeeze on real incomes. Importantly, though we believe short maturity bond yields will be forced up by the rise in policy rates, we suspect that long yields will be depressed by the worsening economic outlook. Hence, we expect further flattening/inversion of yield curves. Of course, much of Asia finds itself in a very different place regarding inflation and we doubt the BOJ will tighten very much (if at all), while we think the People's Bank of China (PBOC) will continue to ease.

We don't think risk taking will be rewarded over the next year

Interestingly, the 12-month asset class projections shown in **Figures 1** and **2** suggest we believe that returns will broadly diminish with riskiness (as judged by historical volatility). This is unusual for us but has been the case over recent quarters. The obvious exception is real estate (REITs), where reasonable yields offer some income and where we expect inflation to allow moderate growth in rentals and dividends. We think that equities, on the other hand, will suffer a more dramatic slowdown in dividends (as profits are squeezed) and yields are lower. We expect yields on both real estate and equities to rise slightly, with the upward pressure from recession risk balanced by the fact that government bond yields may fall.

The optimisation process favours IG and government bonds

Not surprisingly, given the information in **Figure 1**, our optimisation process favours government bonds and investment-grade credit (IG) at the expense of equities, high-yield credit (HY) and commodities, including gold (see **Figure 41**).

Cash: the great diversifier that now offers return

In determining our Model Asset Allocation, we follow the optimisation results in direction, if not magnitude (we are wary of being too negative on equities after recent steep declines and can see that bond yields may still go higher). We make limited changes this time, going further Overweight cash and further Underweight equities. We have long extolled the virtues of **cash** as a diversifying asset (see **Figure 4**) but recent rate hikes mean that it now also offers reasonable compensation. Hence, we are boosting the allocation to 8% from the previous 5% (versus a Neutral 2.5%).

Higher yields elsewhere and the growing risk of recession lead to a reduced allocation to equities

E**quities** have fallen a lot this year but our analysis suggests those declines were due to rising bond yields, with no allowance for a potential fall in profits. We are slightly reducing the allocation to equities to 37% from the previous 40% (versus the Neutral 45%). We are wary of reducing the allocation by too much given the recent market decline. **Figure 3** shows that we reduce the allocations in the US (to further Underweight) and the UK (to Neutral). We continue to favour EM equities and, in particular, those of China (see -- Why I like Chinese equities).

We remain Overweight government bonds

We maintain the Overweight allocation to **government bonds**, the fixed income asset class upon which we expect the best returns. Yields have risen and we think there is a possibility of declines in long maturity yields over the next 12 months, though we expect short yields to rise sharply as central banks tighten (yield curves flattening). As we expect the BOE to raise rates the most, we are reducing the UK government bond allocation (to zero), while going further Overweight in the US and Eurozone.

We prefer IG to HY

We make no changes to the allocations to credit categories and continue to favour **IG** (Overweight) over **HY** (zero allocation). Though we think that yield spreads versus government bonds will widen for both categories, we worry that HY defaults will rise, which reduces the HY return projections (see **Figure 1**).

Real estate to generate the best returns

Our return projections suggest **real estate** will be the most remunerative asset over the next 12 months (though with heightened volatility) and we maintain the Overweight 10% allocation (versus the Neutral 8%). Within real estate, we reduce allocations to EM and Japan (both of which have outperformed), while boosting the US and Europe ex-UK (the latter has underperformed by quite some margin – see **Appendix 2**).

We continue to avoid commodities

Commodities have recently lost some of gains made in the early part of the year and we think that decelerating economies will put further downward pressure upon the cyclical raw materials (energy and industrial metals). Given that we believe prices remain high in real terms (except for agriculture), we maintain a zero allocation to the asset class, including **gold**.

EM assets preferred, partly as a hedge

From a regional perspective, we continue to prefer EM assets. This is partly because we find them to be relatively cheap (which boosts long-term potential, in our opinion) but also as a hedge in case we are wrong about being in the contraction phase of the cycle.

No currency hedges

From a currency perspective, we think the US dollar is expensive and yield gaps versus other currencies have started to move against it. However, we are not hedging our US dollar exposure, as we are already Underweight US assets.

Two alternative scenarios

Finally, we consider two alternatives to our central case. In a scenario where inflation stays higher for longer than we expect, we would favour defensive assets even more than we do. On the other hand, if inflation falls surprisingly quickly, we would switch to favouring cyclical assets, with an even greater emphasis on EM.

Figure 2 – Expected total returns (annualised, local currency) and Model Asset Allocation*

	Expected 1-year Total Return	Neutral Portfolio	Policy Range	Model Asset Allocation	Position Vs Neutral
Cash & Gold	-2.7%	5%	0-10%	↑ 8%	Overweight
Cash	1.7%	2.5%	0-10%	↑ 8%	Overweight
Gold	-7.0%	2.5%	0-10%	0%	Underweight
Government Bonds	2.1%	25%	10-40%	30%	Overweight
Corporate IG	1.8%	10%	0-20%	15%	Overweight
Corporate HY	0.9%	5%	0-10%	0%	Underweight
Equities	-1.0%	45%	25-65%	↓ 37%	Underweight
Real Estate (REITS)	3.7%	8%	0-16%	10%	Overweight
Commodities	-7.8%	2%	0-4%	0%	Underweight

*This is a theoretical portfolio and is for illustrative purposes only. It does not represent an actual portfolio and is not a recommendation of any investment or trading strategy. Arrows show direction of change in allocations. See appendices for definitions, methodology and disclaimers. **There is no guarantee that these views will come to pass**. Source: Invesco Global Market Strategy Office

Model asset allocation*

Figure 3 – Model asset allocation (20/09/2022)

	Neutral	Policy Range		Allocation	Position vs Neutral
Cash Equivalents	**5%**	**0-10%**	↑	8%	
Cash	2.5%		↑	8%	
Gold	2.5%			0%	
Bonds	**40%**	**10-70%**		**45%**	
Government	25%	10-40%		**30%**	
US	8%		↑	11%	
Europe ex-UK (Eurozone)	7%		↑	10%	
UK	1%		↓	0%	
Japan	7%			5%	
Emerging Markets	2%			4%	
China**	0.2%			0%	
Corporate IG	10%	0-20%		**15%**	
US Dollar	5%			7%	
Euro	2%			4%	
Sterling	1%			2%	
Japanese Yen	1%			0%	
Emerging Markets	1%			2%	
China**	0.1%			0%	
Corporate HY	5%	0-10%		**0%**	
US Dollar	4%			0%	
Euro	1%			0%	
Equities	**45%**	**25-65%**	↓	**37%**	
US	25%		↓	14%	
Europe ex-UK	7%			4%	
UK	4%		↓	4%	
Japan	4%			5%	
Emerging Markets	5%			10%	
China**	2%			4%	
Real Estate	**8%**	**0-16%**		**10%**	
US	2%		↑	3%	
Europe ex-UK	2%		↑	3%	
UK	1%			2%	
Japan	2%		↓	0%	
Emerging Markets	1%		↓	2%	
Commodities	**2%**	**0-4%**		**0%**	
Energy	1%			0%	
Industrial Metals	0.3%			0%	
Precious Metals	0.3%			0%	
Agriculture	0.3%			0%	
Total	**100%**			**100%**	

Currency Exposure (including effect of hedging)				
USD	48%		↑	40%
EUR	20%		↑	23%
GBP	7%		↓	9%
JPY	15%		↓	11%
EM	9%		↓	18%
Total	**100%**			**100%**

*This is a theoretical portfolio and is for illustrative purposes only. It does not represent an actual portfolio and is not a recommendation of any investment or trading strategy. **China is included in Emerging Markets allocations. Cash is an equally weighted mix of USD, EUR, GBP and JPY. Currency exposure calculations exclude cash. Arrows show direction of change in allocations. See appendices for definitions, methodology and disclaimers. Source: Invesco Global Market Strategy Office

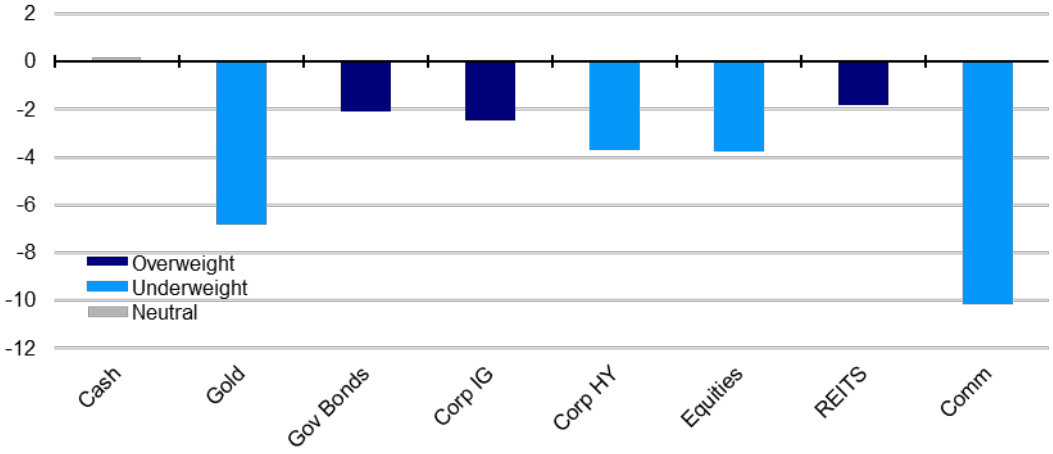
Since we last wrote

In the last Big Picture document we reduced equities to Underweight and boosted government bonds to Overweight within our Model Asset Allocation. This was balanced by increasing real estate (REITs) to Overweight and reducing investment grade (IG) credit (see Global Asset Allocation 2022 Q3 published on 19 June 2022). From a regional perspective we favoured UK and EM assets. **Figure 4** shows how global assets have performed since then (as of 31 August 2022). Full regional detail is shown in **Appendix 2**.

Only cash delivered positive returns

Most assets have again delivered negative returns in both local currency and USD, with the notable exception of cash. That was fortunate for us, given that we were Overweighted in cash (having been maximum allocated at the start of the year). The assets that we Overweighted seemed to suffer the least over the most recent three months. From a regional perspective, our preference for EM assets brought mixed results, while our UK preference was punished (especially given sterling weakness).

Figure 4 – Global asset class total returns since 31/05/22 (local currency, %) *

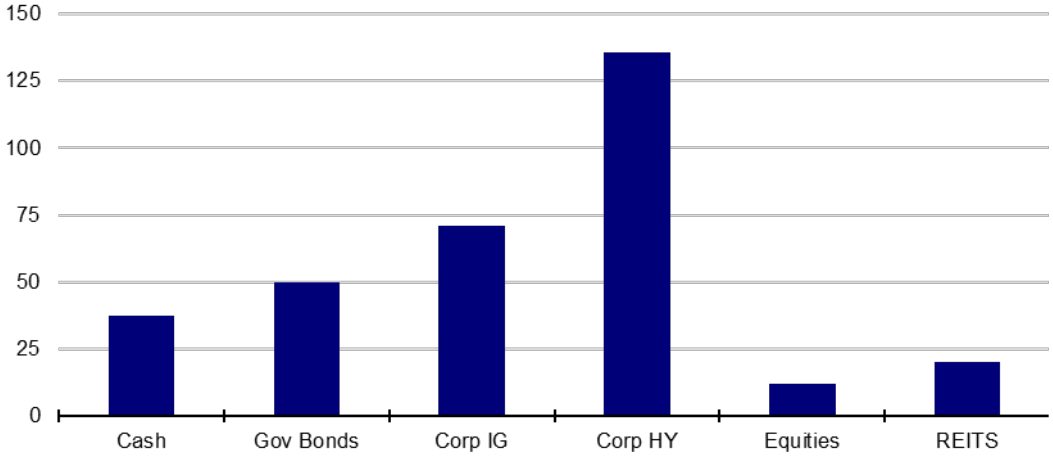


*31/05/22 to 31/08/22. Colours represent model allocations during this period. See appendices for definitions and disclaimers. **Past performance is no guarantee of future results**. Source: Refinitiv Datastream, Invesco

Yields up on all assets, especially bonds

The negative performance of yield bearing assets was the result of another sizeable increase in yields (see **Figure 5**). In particular, the rise in credit yields suggests a widening of spreads. The question now is whether fixed income yields are generous enough to justify a further rebalancing towards bonds. We think not.

Figure 5 – 3m change in global yields (bps)



From 31/05/22 to 31/08/22. See appendices for definitions and disclaimers. **Past performance is no guarantee of future results**. Source: Refinitiv Datastream and Invesco

Invesco's 10-year CMAs have been published

Taking a step back: focusing on the next decade using Invesco's CMAs

Before considering projections for the next year, it may be instructive to use longer term return projections as a guide. Invesco Investment Solutions have just published their 10-year capital market assumptions. **Figure 6** shows their projected returns for global asset classes in a range of currency bases (their framework differs from ours, so we have had to adapt some of their categories – for instance, we use their US Treasury Short category to represent cash and precious metals is used for gold). A more detailed version showing regional projections is contained in **Appendix 3**.

Figure 6: Invesco 10-year capital market assumptions (global assets, % ann.)

	USD	EUR	GBP	CHF
Cash & Gold	3.5	1.9	2.8	1.6
Cash - US Treasury Short	2.6	1.0	1.9	0.7
Gold	4.4	2.8	3.7	2.5
Government Bonds	3.3	1.7	2.7	1.4
Corporate IG	4.2	2.6	3.6	2.3
Corporate HY - US HY	7.3	5.7	6.6	5.3
Equities	7.7	6.1	7.1	5.8
Real Estate (REITS)	7.3	5.7	6.6	5.4
Commodities	7.6	6.0	6.9	5.7

Note: Estimates as of 30 June 2022 and based on the 10-year capital market assumptions published by Invesco Investment Solutions in Long-Term Capital Market Assumptions (August 2022). The USD version of the CMAs is reproduced in Appendix 3. The above table uses the geometric expected return version for global asset classes ("gold" is based on the projections for precious metals and the "Cash & Gold" category shows the average of those two assets). These estimates reflect the views of Invesco Investment Solutions, the views of other investment teams at Invesco may differ from those presented here. **There is no guarantee that these views will come to pass.** Source: Invesco Investment Solutions

Commodities, gold & HY dominate most 10-year CMA based optimal portfolios

Those projected returns are higher than they were (especially for HY), largely because yields are now higher and prices lower. Not surprisingly, the further we move along the risk spectrum, the higher the projected returns. Unfortunately, there are no hard-and-fast messages that come from the optimised solutions (see **Figure 7**). Though results vary by currency base and depend on what is maximised (Sharpe Ratio or returns), there are some broad themes: for example, commodities, cash & gold and HY are maximised in all but one case, IG is mainly zero allocated, while real estate is mainly Underweighted. The messages are not clear for government bonds or equities (the former is favoured when maximising the Sharpe Ratio, the latter when maximising returns). Let's see how shortening the time horizon and allowing for the cycle impacts the conclusions.

Figure 7: Optimised global allocations based on Invesco's 10-year CMA projected returns

	Neutral Portfolio	Policy Range	Maximise Sharpe Ratio				Maximise Return			
			USD	EUR	GBP	CHF	USD	EUR	GBP	CHF
Cash & Gold	5%	0-10%	10%	10%	10%	10%	10%	10%	0%	10%
Cash	2.5%	0-10%	10%	9%	5%	0%	0%	0%	0%	0%
Gold	2.5%	0-10%	0%	1%	5%	10%	10%	10%	0%	10%
Government Bonds	25%	10-40%	40%	40%	40%	36%	10%	15%	10%	14%
Corporate IG	10%	0-20%	12%	2%	0%	0%	0%	0%	0%	0%
Corporate HY	5%	0-10%	10%	10%	10%	10%	10%	10%	5%	10%
Equities	45%	25-65%	25%	34%	36%	33%	64%	61%	65%	49%
Real Estate (REITS)	8%	0-16%	0%	0%	0%	7%	3%	0%	16%	13%
Commodities	2%	0-4%	3%	4%	4%	4%	4%	4%	4%	4%

Note: optimisations are based on the 10-year projected returns published by Invesco Investment Solutions in Long-Term Capital Market Assumptions (August 2022), as shown in **Figure 6** above. Optimisations are performed by the Asset Allocation Research team using our historical 10-year covariance matrices (for each currency). "Gold" is based on the projections for precious metals and the "Cash & Gold" category shows the sum of allocations for those two assets. "Maximise Sharpe Ratio" optimisations are performed by maximising the Sharpe Ratio subject to not violating the constraints implied by the policy ranges shown in the table. "Maximise Return" optimisations are performed by maximising return subject to the policy range constraints but also subject to the standard deviation of returns not exceeding that of the Neutral Portfolio (as shown in **Figure 3**). Though based on the projected returns provided by Invesco Investment Solutions, these optimal allocations do not represent their views, nor those of any other investment team at Invesco. See appendices for definitions, methodology and disclaimers.
Source: Invesco Investment Solutions, Invesco

A business cycle framework

A cyclical view of asset class performance

Having considered the long-term outlook, we will now shorten the time horizon and introduce cyclical considerations. The business cycle framework developed by Alessio de Longis (Invesco Investment Solutions) is summarised in **Figure 8**. Not surprisingly, cyclical assets such as equities and HY tend to do better in the early stages of the economic cycle, with more defensive assets (government bonds and IG) outperforming during the contractionary phase.

We started the year expecting the global economy to be decelerating. This put it in Alessio's slowdown phase, which is typically associated with a convergence of asset returns. Unfortunately, the convergence has been to the downside during 2022 (see **Figure 4** and **Appendix 2**).

From slowdown to contraction, hence we favour defensive assets

Even worse, by the time we published the June edition of the Big Picture, we were worried that we may be slipping into recession, which pushed us into Alessio's contraction regime (hence the switch to government bonds and away from equities). Everything we have seen since then (high inflation squeezing real incomes, central banks tightening aggressively and the threat of energy shortages in Europe) comforts us in our view that contraction is the most likely outcome. The rise in interest rates since then (see **Figure 5**) only adds to the attraction of those more defensive fixed income assets, along with cash (note that **Figure 8** shows historical excess returns versus cash).

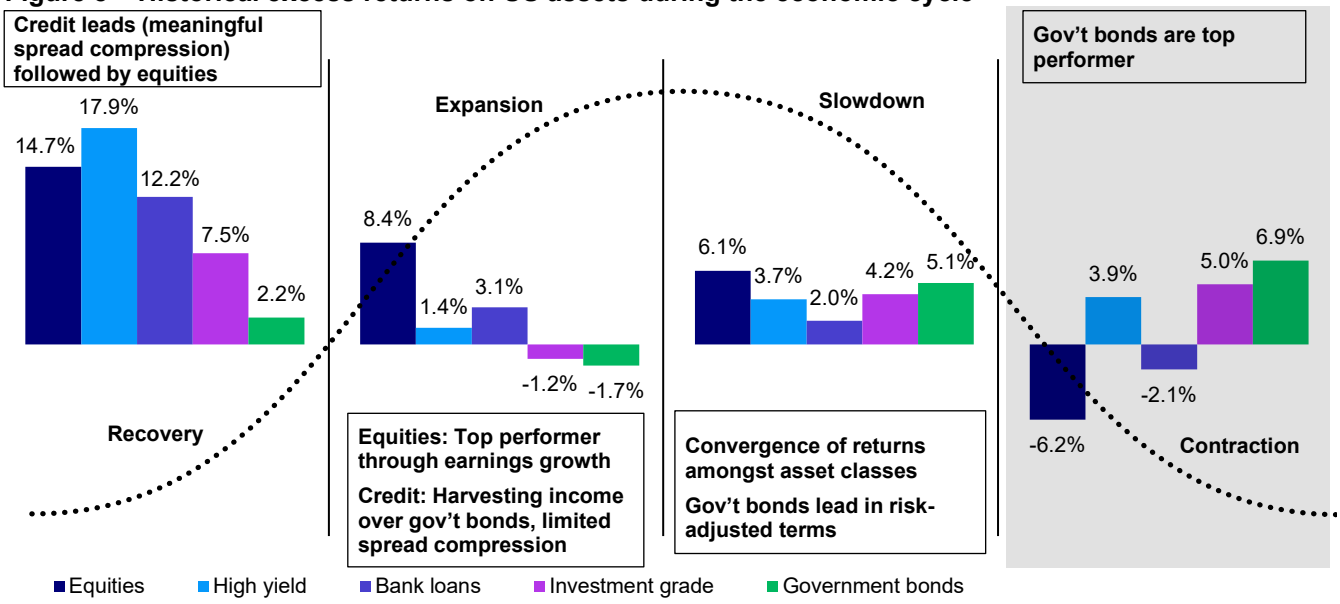
We also consider how we may be wrong

Of course, if we are wrong about where we are in the cycle, the implications for the performance of our Model Asset Allocation would be dramatic. Hence, what follows is an analysis of why we fear recession, along with consideration of how we could be wrong (alternatives scenarios) and how we build resilience into the Model Asset Allocation.

And use valuations to judge what is priced-in

As usual, we also emphasise the importance of valuations. For instance, even though government yields have risen, those on HY have risen even more, giving the possibility that the latter has already priced-in a lot of bad news. Likewise, we need to be careful not to shun other cyclical assets such as equities and real estate (or regions) that have already priced-in recession. The Model Asset Allocation is a balanced appraisal of those cyclical and valuation factors.

Figure 8 – Historical excess returns on US assets during the economic cycle



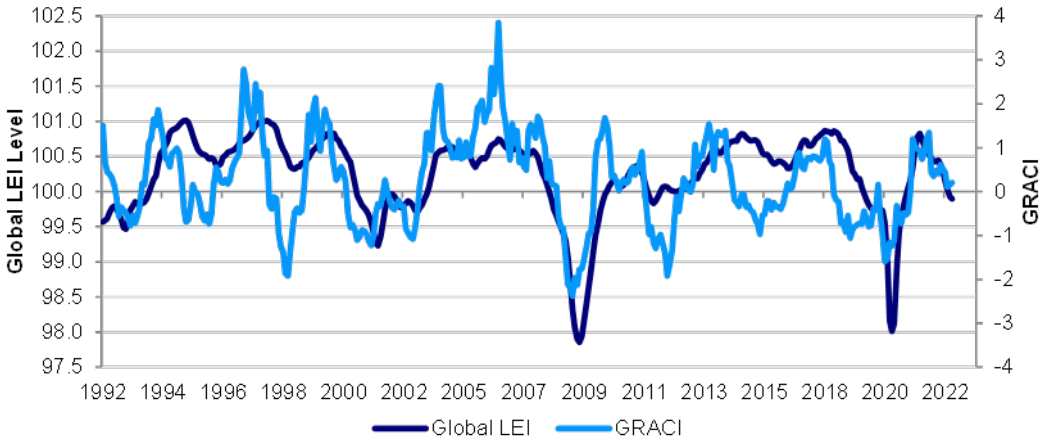
Notes: Index return information includes back-tested data. **Returns, whether actual or back tested, are no guarantee of future performance**. Annualised monthly returns from January 1970 – December 2021, or since asset class inception if a later date. Includes latest available data as of most recent analysis. Asset class excess returns defined as follows: Equities = MSCI ACWI - US T-bills 3-Month, High Yield = Bloomberg Barclays HY - US T-bills 3-Month, Bank loans = Credit Suisse Leveraged Loan Index – US T-bills 3-Month, Investment Grade = Bloomberg Barclays US Corporate - US T-bills 3-Month, Government bonds = FTSE GBI US Treasury 7-10y - US T-bills 3-Month. For illustrative purposes only. Please see appendices for further information.
Sources: Invesco Investment Solutions' proprietary global business cycle framework and Bloomberg L.P.

Proprietary indicators suggest we are in a contraction regime

Where are we in the cycle?

Figure 9 shows two proprietary indicators from Invesco Investment Solutions, designed to help decide where we are in economic and market cycles. The Global LEI (leading economic indicator) measure suggests that global growth is running below historical norms, while the GRACI (Global Risk Appetite Cycle Indicator) suggests that risk appetite is deteriorating. Hence the conclusion that we are in a contraction regime.

Figure 9 – Global risk appetite and the global business cycle

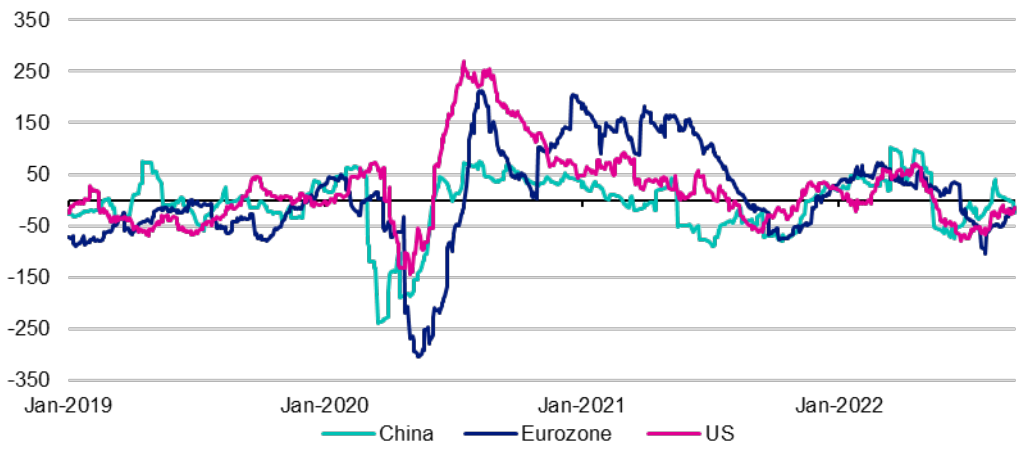


Note: **past performance does not guarantee future results**. Monthly data from January 1992 to August 2022 (as of 31 August). Both Global LEI (Leading Economic Indicator) and GRACI (Global Risk Appetite Cycle Indicator) are proprietary tools provided by Invesco Investment Solutions (IIS). Global LEI is a weighted average of leading indicators for 23 countries (both developed and emerging). A reading above (below) 100 signals growth above (below) a long-term average. GRACI measures the average incremental return received per incremental unit of risk taken in global financial markets (i.e., incremental return received for moving from government bonds to credit, from credit to developed equities, from developed equities to emerging equities, etc.). It is calculated using country-level total return indices across fixed income and equity markets. A reading above (below) zero signals a positive (negative) compensation for risk taking in global capital markets in the recent past. A rising index signals improving market sentiment and vice-versa. Sources: Bloomberg L.P., Macrobond, MSCI, FTSE, JP Morgan and Invesco Investment Solutions

But expectations seem adjusted to that reality

The good news is that economic outcomes now appear to be more in line with expectations (**Figure 10** shows that the disappointments of recent months have faded). Of course, that may be because expectations have become more realistic but that is encouraging from a financial market perspective. However, **Figure 10** also reveals divergence across regions, with China's positive surprises proving to have been short lived, while momentum appears to be improving in both the Eurozone and the US. This doesn't mean that Western economies have stopped weakening, simply that economists have adjusted to that reality. The question now is whether the worse (in terms of economic performance) is behind us or whether the cycle is still worsening.

Figure 10 – Citigroup Economic Surprise Indices

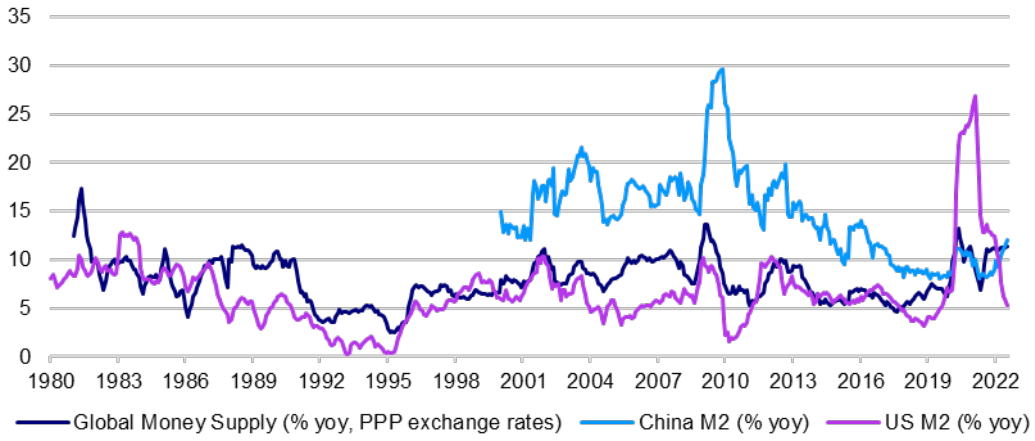


Note: based on daily data from 1 January 2019 to 8 September 2022.
Source: Citigroup, Refinitiv Datastream and Invesco

The global monetary situation is more mixed than might be thought

Based on the evidence in **Figure 11**, global monetary growth is lower than during 2020 but has nonetheless improved during this year. This may seem odd given the tightening being implemented by the Fed and other western central banks (see how US money supply growth has collapsed) but **Figure 11** shows that China's M2 growth has picked up. This makes it difficult to interpret the uptick in global money supply growth, given that China's capital controls prevent its monetary growth flowing into the rest of the world. However, China is not alone, with Canada, Mexico and South Africa, for example, also experiencing an acceleration in monetary aggregates this year.

Figure 11 – Global money supply growth

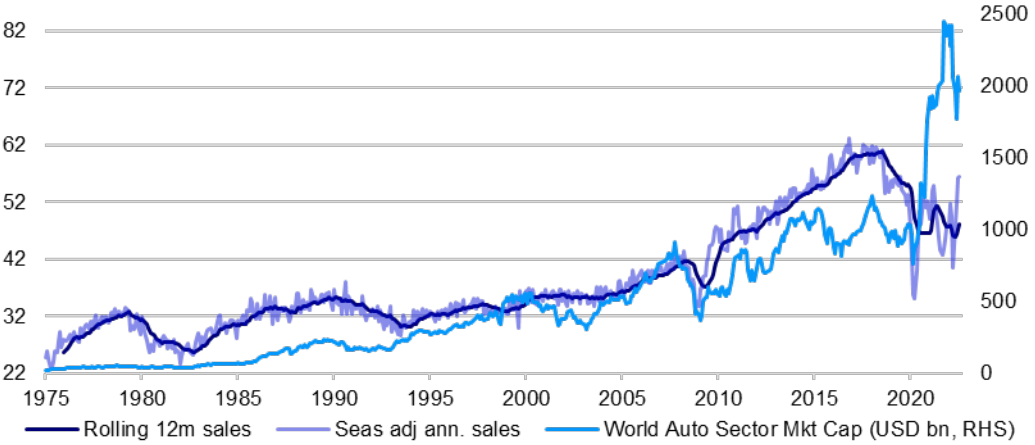


Note: monthly data from January 1980 to July 2022. "Global Money Supply" is based on an aggregation of broad money supply aggregates (usually M3) for the following countries: Australia, Brazil, Canada, Chile, China, Colombia, Costa Rica, Czech Republic, Denmark, Eurozone, Hungary, Iceland, India, Indonesia, Israel, Japan, Mexico, New Zealand, Norway, Poland, Russia, South Africa, South Korea, Sweden, Switzerland, Turkey, United Kingdom and United States. The aggregation is based on national money supplies using purchasing power parity (PPP) exchange rates to convert to US dollars (PPP exchange rates are those which equalise spending power across countries and are usually more stable than market exchange rates).
Source: MSCI, OECD, Oxford Economics, Refinitiv Datastream and Invesco

And one global indicator has improved

Concerning real spending activity, **Figure 12** suggests there has been a rebound in global auto sales. Again, this seems odd given the squeeze on real spending power but may reflect the release of pent-up demand as supply-chain blockages are eased.

Figure 12 – Global auto sales (million) and market capitalisation of auto stocks



Notes: **Past performance is no guarantee of future results**. Monthly data from January 1975 to August 2022 (as of 31 August 2022). Sales are annualised and based on an aggregation of country sales data (Australia, Austria, Belgium, Brazil, Bulgaria, China, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hong Kong, Hungary, Iceland, India, Indonesia, Ireland, Italy, Japan, Latvia, Lithuania, Luxembourg, Malaysia, Mexico, Netherlands, New Zealand, Norway, Panama, Philippines, Poland, Portugal, Romania, Singapore, Slovakia, Slovenia, South Africa, South Korea, Spain, Sri Lanka, Sweden, Switzerland, Taiwan, Thailand, Turkey, UK, US, Vietnam.). "Seas adj. ann. sales" is seasonally adjusted version of annualised monthly data. "World Auto Sector Mkt Cap" is based on the Datastream World Automobile Index, expressed in US dollars. Source: National data sources, OECD, European Automobile Manufacturers' Association, Refinitiv Datastream, Invesco

Real incomes are being squeezed and we worry for the consumer

Nevertheless, there is a squeeze on real incomes in Europe and the US that suggests many households and businesses must be suffering. **Figure 13** shows that US real personal disposable income is now below the long-term trend (having been boosted by pandemic related government support). With savings buffers now much reduced and wealth damaged by volatile financial markets, we expect US consumer spending to decelerate during 2022 H2. This could prolong the technical recession already seen in the US (GDP was down in each of the first two quarters of 2022).

Figure 13 – US real personal disposable income below trend

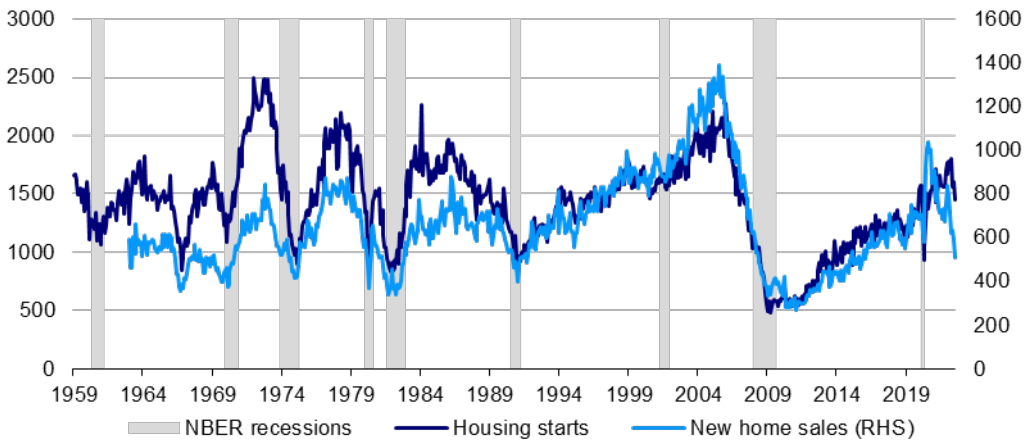
Based on monthly data from January 2000 to July 2022.
Source: Refinitiv Datastream and Invesco

Weak housing data is usually a pre-cursor to recession

One sector of the US economy that is suffering is housing. **Figure 14** shows that having dipped briefly in the early stages of the pandemic recession, new home sales rebounded to reach a cyclical high in August 2020. They have since trended down and in July were at the lowest since January 2016. Apart from the squeeze on real incomes, we suspect the rise in mortgage rates has had a dampening effect on home sales (for example, Freddie Mac 30-year fixed rate mortgage rates have doubled to more than 5% in the period since end-2020). Not surprisingly, the decline in sales is now influencing housebuilding, with housing starts peaking in April 2022.

It is striking that the housing market was shrinking prior to each of the NBER identified recessions since 1959 (admittedly with a multi-year lag in some cases). More importantly, there is only one example over that period of a sizeable downturn in housing that was not followed by recession (in the mid-1960s). We believe this history should at least serve as a warning that US recession is possible, if not guaranteed.

Figure 14 – US recessions and housing market activity (thousands, annualised)

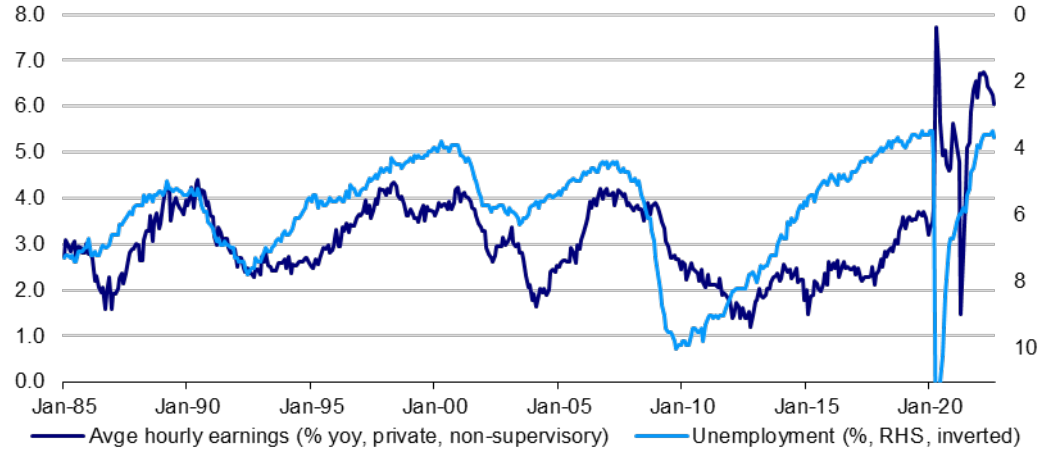


Note: Based on monthly data from January 1959 to July 2022. Housing starts and new home sales are in thousands and are annualised. NBER recessions are periods of US recession as defined by the National Bureau of Economic Research. Source: NBER, Refinitiv Datastream and Invesco

Wages have accelerated where labour markets are tight but US data suggests recent easing

We are more optimistic about the path of inflation, believing that economic deceleration will help deliver the lower inflation rates that central banks crave (though recent data is testing our optimism). **Figure 15** suggests that US wage growth may have peaked, in which case we can hope that core inflation is now on a downward path. Interestingly, US unemployment increased in August (from 3.5% to 3.7%), despite solid job growth. The higher wage growth of the last year may now be enticing discouraged workers back into the labour force, a phenomenon that may add to the tempering of wage growth. We suspect the US may be ahead of Europe on this, with recent evidence from the UK, for example, suggesting that wages may still be accelerating (as of July).

Figure 15 – US unemployment and wage growth



Notes: based on monthly data from January 1985 to August 2022.
Source: Refinitiv Datastream and Invesco

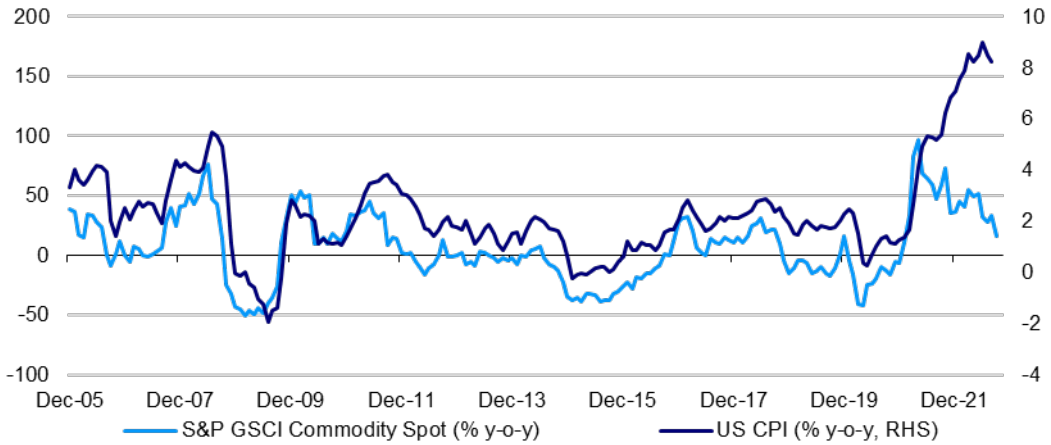
Commodity prices now less of a factor in inflation

Now that commodity prices are falling (see **Appendix 2**), we believe headline inflation will fall more rapidly than core inflation. **Figure 16** shows an easing of the inflation impetus from commodities and that US headline CPI inflation appears to have peaked.

Government measures in Europe could lower inflation but effect on central banks is unclear

Governments throughout Europe (including the UK) are working on proposals to limit the damage of high energy prices on households and businesses. The UK, for example, seems likely to subsidise energy providers so they don't have to increase prices to customers. Any measures that reduce prices charged to consumers will lower inflation below what it would otherwise have been, while helping to mitigate recessionary pressures (by protecting real incomes from the full force of energy price rises). Depending on how these measures are financed (debt versus windfall energy taxes, for example), long term inflation pressures may increase, though central banks may be relieved to see inflation lower in 2023 than previously imagined.

Figure 16 – Commodity prices and US headline inflation



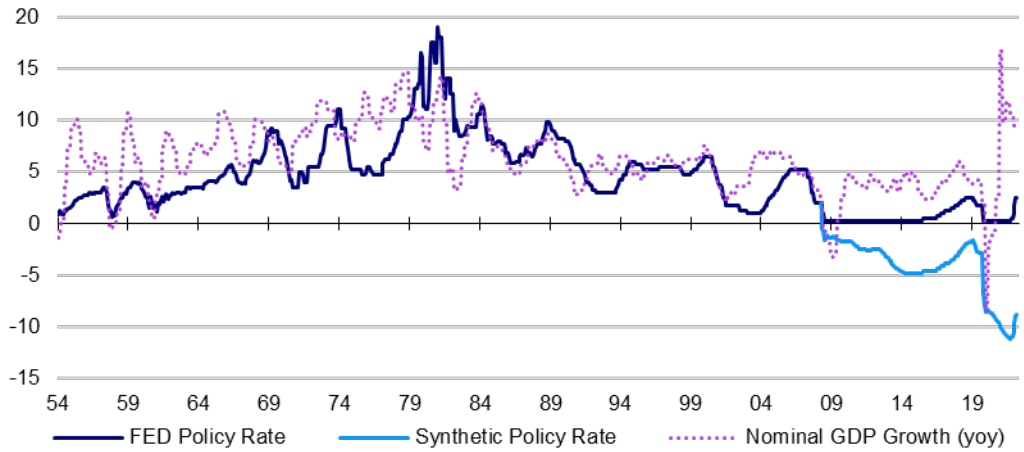
Notes: **Past performance is no guarantee of future results.** Monthly data from December 2005 to September 2022 (as of 16 September 2022). Source: Refinitiv Datastream and Invesco

Central banks waited too long to tighten, thus creating a policy gap

Central bank tightening into 2023

Figure 17 shows just how loose the Fed was prior to the current tightening phase, especially if we add the effect of balance sheet expansion to low policy rates (see "Synthetic Policy Rate"). Given the gap between nominal GDP growth and policy settings (the policy gap), the Fed appears to still have a lot to do. However, we expect a lot of the short-term policy gap closure to come from a decline in nominal GDP growth, while shrinkage of the Fed's balance sheet will gradually raise the synthetic rate.

Figure 17 – Is the Fed getting there?



Notes: Monthly data from June 1954 to August 2022. "Fed Policy Rate" is the effective Fed Funds rate. "Synthetic Policy Rate" is the policy rate adjusted to take account of Fed asset purchases (using the rule of thumb that each $150bn-$200bn of asset purchases is equivalent to a 25bp cut in the policy rate, as explained by ex-Fed Chairman Bernanke to Congress in March 2011). Source: Refinitiv Datastream and Invesco

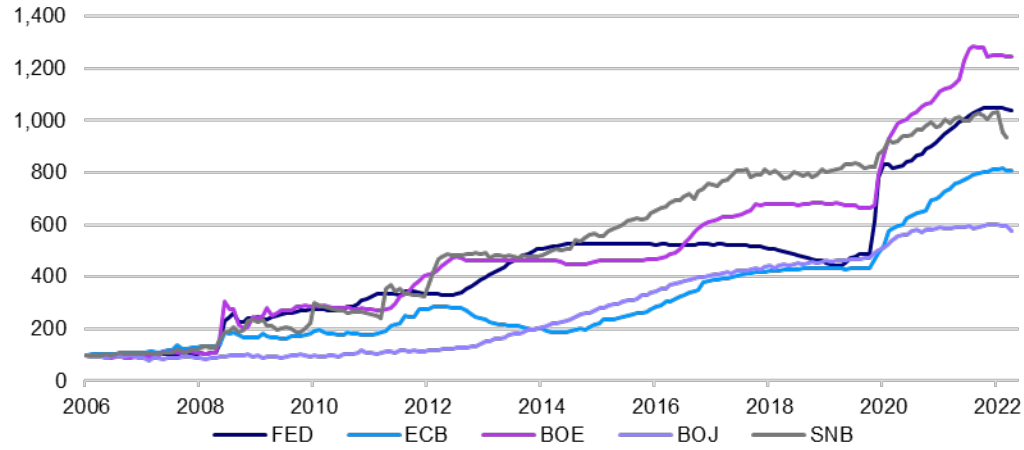
Aggressive rate hikes taking us back to 2008

Nevertheless, disappointing August inflation data and recent statements from the Fed lead us to expect more rate hikes. Fed Funds Futures suggest +75bps in September, +75bps in November and +25bps in December, taking the upper end of the target range to 4.25% by year end (as of 16 September). Market pricing also suggests there will be another 25bp hike during 2023 Q1, which is expected to be the peak. Elsewhere, OIS spreads suggest that ECB rates will rise by a similar margin (200bps) before peaking around mid-2023 and that BOE rates will rise by a total of around 275bps before peaking in mid-2023. That would take all three policy rates to the highest since 2008.

And central bank balance sheets are also shrinking

The Fed and the BOE have laid out plans to reduce their asset holdings but all major central banks that have used quantitative easing in a big way since the global financial crisis (GFC) are now stabilising or reducing the size of their balance sheets (see **Figure 18**). In our opinion, this could have a further depressing effect on asset returns.

Figure 18 – Central bank balance sheets (31/5/2006 = 100)

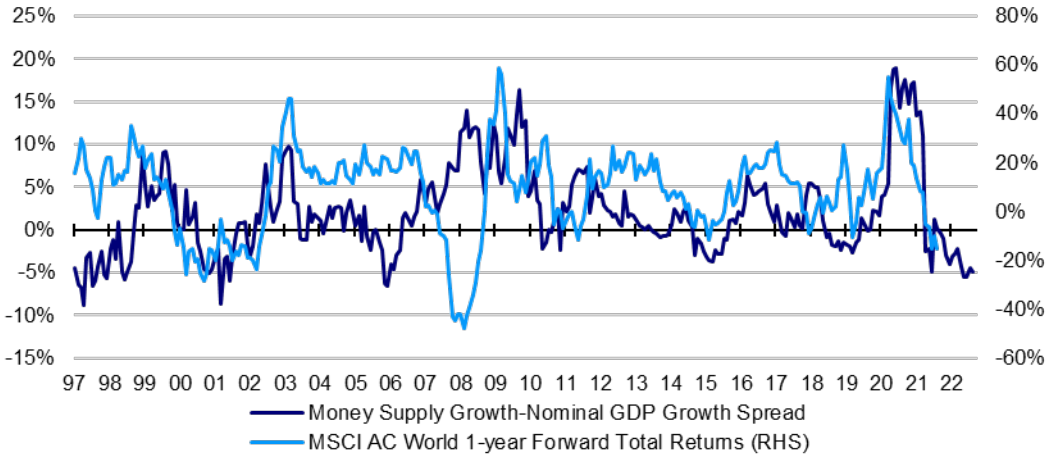


Notes: Monthly data from May 2006 to August 2022.
Source: Bank of England, Refinitiv Datastream and Invesco

Tightening monetary conditions also point to a poor outlook for equities

Indeed, we think it inevitable that the change in monetary conditions will change the outlook for financial assets. **Figure 19** compares global excess money supply growth to equity market performance over the next 12 months (excess money supply growth is money supply growth minus nominal GDP growth, aggregated across the US, China, Eurozone, Japan and the UK). Though the relationship is far from perfect, there is some correlation, which makes intuitive sense with excess monetary growth finding its way into financial markets. Based on the elimination of excess money supply growth, we fear the outlook for global equities remains limited.

Figure 19 – Global excess money supply growth and equity market performance

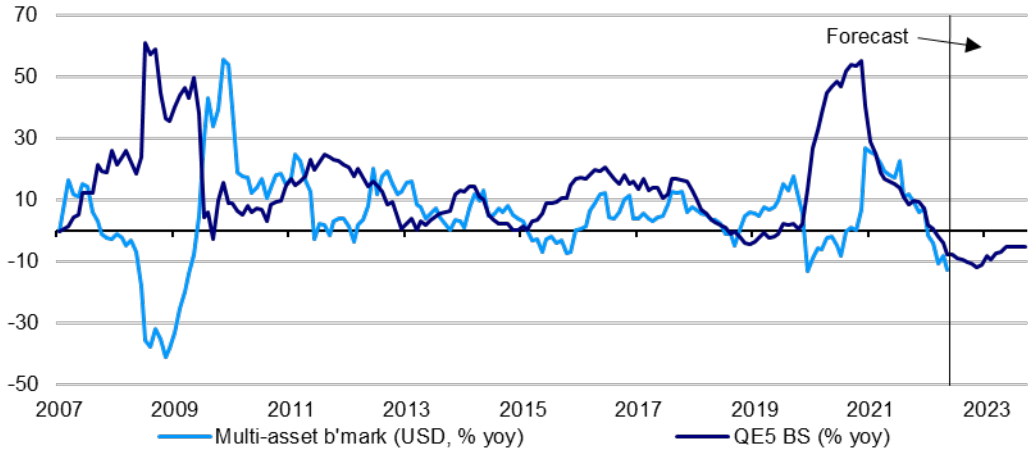


Notes: **Past performance is no guarantee of future results**. Monthly data from January 1997 to August 2022. We aggregate money supply and nominal GDP in US dollars for the US, Eurozone, China, Japan and the UK using Thomson Reuters International Comparable Economic indicators. Our money supply indicator is M2 for the US and China and M3 for the Eurozone, Japan and the UK. We measure the difference between the year-on-year growth in the money supply and nominal GDP. We use the MSCI All-Country World index in USD for equity total returns. Data as of 31 August 2022. Source: Datastream and Invesco

And quantitative tightening could depress asset returns

Figure 20 shows a similar concept with a comparison between the growth of central bank balance sheets and returns on a diversified mix of global assets (represented by the Neutral stance within our Model Asset Allocation -- see **Figure 3**). If there is a correlation between balance sheet expansion and asset returns (which seems logical), and given our view of how balance sheets will develop to end-2023, we conclude that investors will remain challenged over the coming months and quarters.

Figure 20 – QE5 balance sheet and asset returns (%)



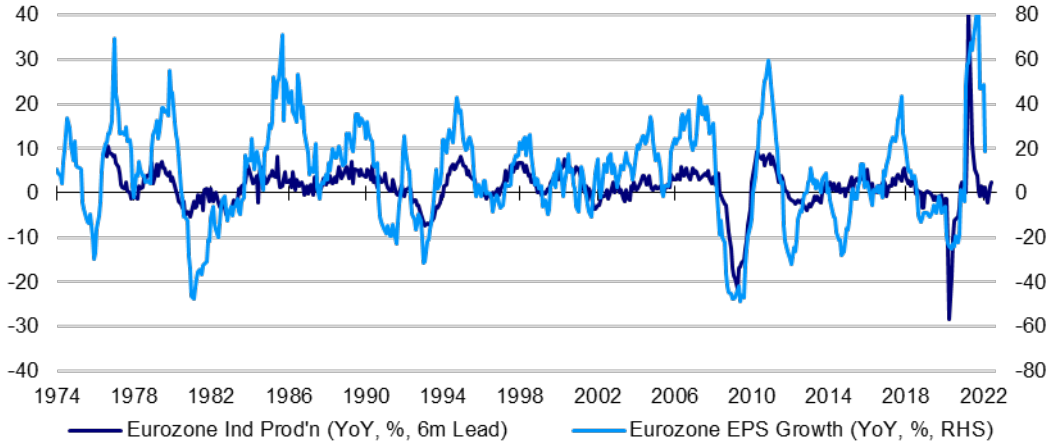
Notes: **Past performance is no guarantee of future results**. QE5 BS is the aggregate balance sheet of Fed, ECB, BOE, BOJ and SNB in USD. Forecast considers asset purchase plans of the central banks but ignores other sources of growth. The Fed has announced an asset holding reduction plan of $95bn per month (we assume it stays at that rate to end-2023). The ECB has ended its asset purchases and we also assume stability in BOJ and SNB balance sheets over the forecast horizon. The BOE has suggested it will reduce its asset holdings by £6bn per month. The multi-asset benchmark is a fixed weighted index based on the Neutral asset allocation of Invesco's Asset Allocation Research team. From May 2007 to December 2023. As of 31 August 2022. Source: BOE, Refinitiv Datastream and Invesco

Profits are flattening, which may limit dividend growth

From economic to market cycles

Figure 21 shows a clear relationship between the growth of industrial production and that of profits in the Eurozone (we note a similar relationship in other regions). Given the lag in the relationship (which we usually find to be 6-9 months), we expect earnings per share (EPS) growth to grind towards zero and even become negative if economic recession occurs (as we expect in the Eurozone). Indeed, observation of EPS levels shows a flattening in all regions and we expect only minimal dividend growth. Without dividend growth, stock markets will need to rely on multiple expansion to generate capital returns (and multiples have been contracting so far this year – see **Figure 26**).

Figure 21 – Eurozone industrial production and profit growth

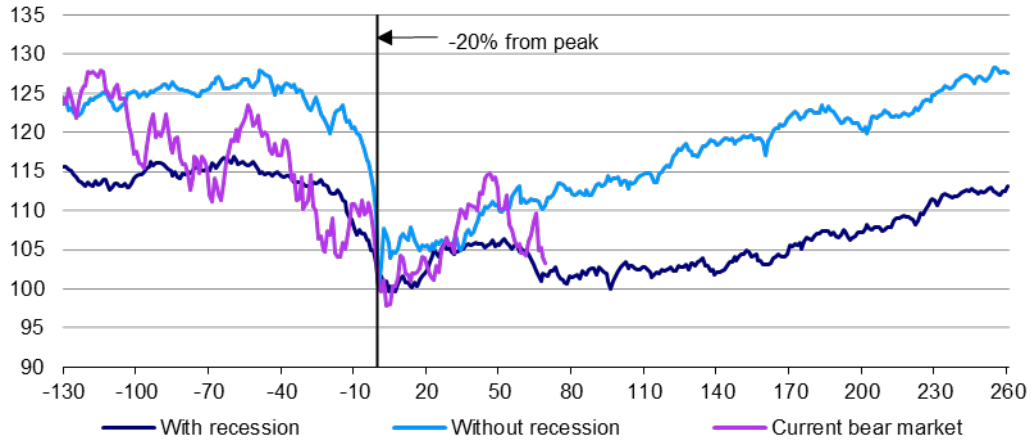


Notes: monthly data from January 1974 to August 2022. EPS is earnings per share and is calculated as the quotient of the Datastream EMU price index and the respective price-earnings ratio.
Source: Refinitiv Datastream and Invesco

The future path of the S&P 500 depends upon the economy

History suggests that whether there is recession is of critical importance to the future path of equity markets. **Figure 22** summarises the history of S&P 500 bear markets since 1957, categorising them according to whether they were associated with recession. It appears that once bear market territory is reached, the stock market rebounds. When there is no recession, the market then continues higher but when there is recession it tends to roll over again, perhaps reaching a new low. The current path of the US equity market is fluctuating between the two categories.

Figure 22 – S&P 500 bear markets since 1957 (= 100 on day -20% is reached)

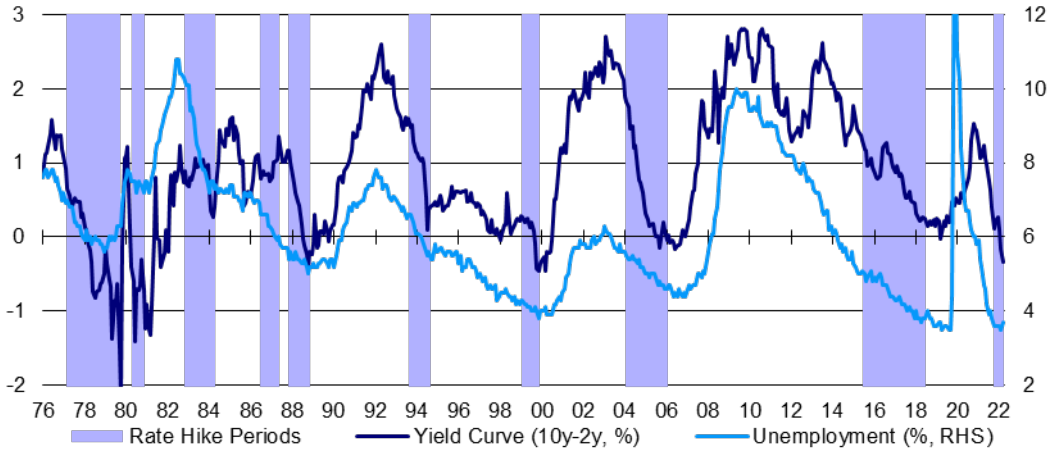


Note: **Past performance is no guarantee of future results**. Based on daily data from 4 March 1957 to 16 September 2022. Bear markets are defined as a top-to-bottom decline of at least 20% in the S&P 500. The chart shows the path of the S&P 500 in the 130 days (six months) before and 260 days (one year) after the day that the decline from the previous peak reaches 20% (day zero), as shown by the horizontal axis. "With recession" shows the average path of the eight bear markets that were associated with US recession (as defined by the US National Bureau of Economic Research). "Without recession" shows the average path of the four bear markets not associated with US recession. Current bear market shows the path of the S&P 500 during the 2022 bear market. Source: Global Financial Data, National Bureau of Economic Research, Refinitiv Datastream and Invesco

The slope of the yield curve is a cyclical phenomenon

Likewise, there are cyclical elements to government bond markets. **Figure 23** shows a good correlation between the rate of unemployment and the slope of the US treasury yield curve. In particular, the turning points are very similar. In most cycles, the Fed had stopped tightening before unemployment and the yield curve bottomed. This cycle is notable for the fact that unemployment was already very low and the yield curve was almost flat before the Fed had even started to raise interest rates. If the Fed does as the market expects over the coming months, we expect the yield curve to flatten even more, with short maturity yields rising and longer maturity yields flattening/falling. However, if August's rise in unemployment were to become a trend, we would expect the Fed to stop tightening and the yield curve to eventually steepen (as long yields decline).

Figure 23 – US unemployment, the yield curve and Fed tightening cycles

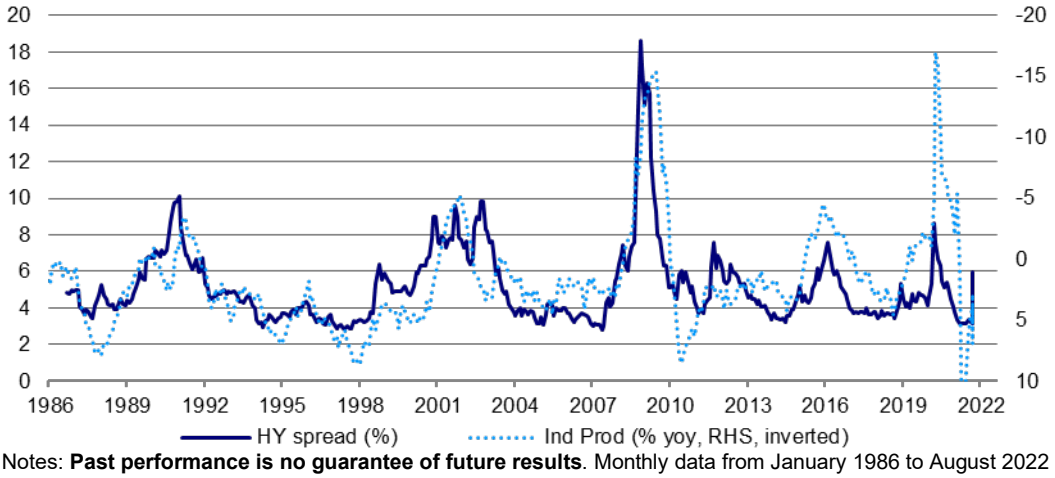


Notes: **past performance is no guarantee of future results**. Based on monthly data from June 1976 to August 2022 (as of 31 August 2022). The shaded areas show periods when the US Federal Reserve was raising interest rates (from first to last rate hike). Source: Refinitiv Datastream and Invesco

The cycle is also causing a widening of credit spreads, which we think could go further

Figure 24 suggests an inverse cyclical relationship between industrial production growth and HY spreads. We have already noted that the yield on HY credit has risen more than that on other asset categories (see **Figure 5**) and **Figure 24** suggests that the US HY spread may have anticipated a bigger economic slowdown economy than seen so far. However, we expect a further deceleration in most economies and wouldn't be surprised to see even more widening of those spreads (the same applies to IG credit). At the same time, we expect the economic slowdown to depress long-term government yields, so that the yield on credit instruments may rise less than suggested simply by consideration of spreads. The full range of assumptions that underpin our 12-month asset forecasts are shown in **Appendix 4**.

Figure 24 – US industrial production and high-yield spread



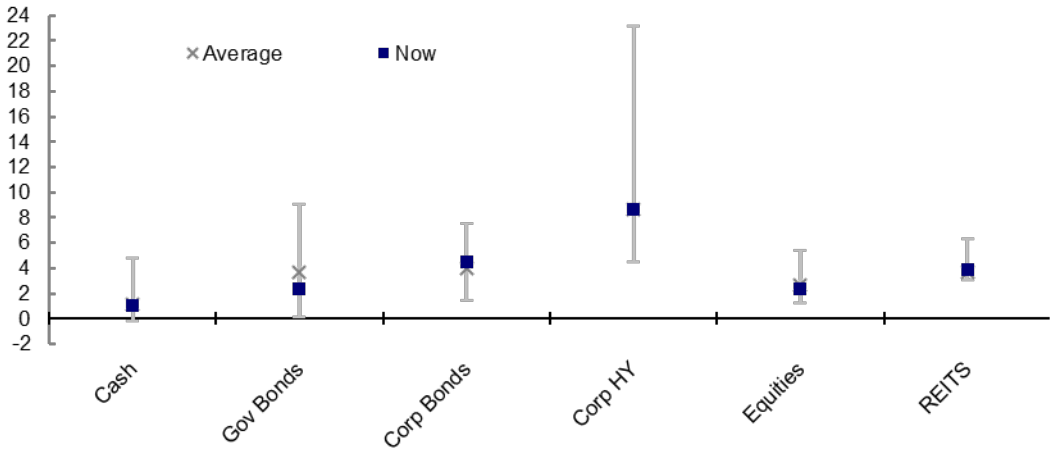
Notes: **Past performance is no guarantee of future results**. Monthly data from January 1986 to August 2022 (as of 31 August). HY spread is the difference between the yield to maturity on the ICE BofA US High Yield Index and the US 10-year treasury yield. Source: Refinitiv Datastream and Invesco

Higher yields improve the scope for future returns on some assets, in our opinion

We think valuations are now more appealing but is that enough?

The good news is that the rise in yields shown in **Figure 5** (and the accompanying negative performance) gives a better long-term starting point for most assets (see **Figure 6**, for example). **Figure 25** puts those global yields into a historical perspective (with regional detail available in **Appendix 1**). As can be seen, yields on some assets are near historical norms but none are yet high enough to encourage optimism on valuation grounds alone. The only exceptions are found in emerging markets, especially for REITs where the yield is 5.7% (see the regional detail in **Appendix 1**).

Figure 25 – Global asset class yields within historical ranges (%)

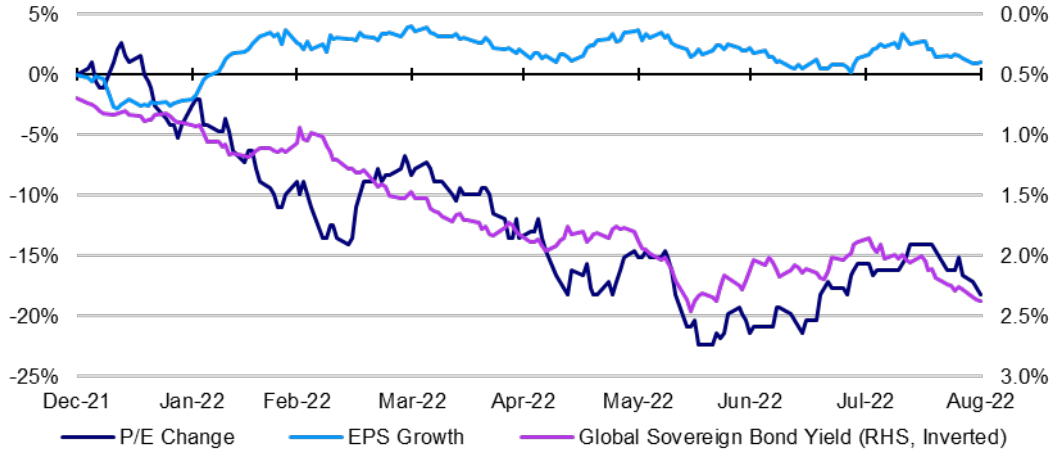


Start dates for historical ranges are cash 1/1/01; govt bonds 31/12/85; corp bonds 31/12/96; corp HY 31/12/97; equities 1/1/73; REITs 18/2/05. See appendices for definitions, methodology and disclaimers. As of 31 August 2022. Source: Refinitiv Datastream and Invesco

Stock markets are yet to reflect lower growth potential

When it comes to the decline in global equity markets during 2022, **Figure 26** suggests it has been entirely due to the effect of rising bond yields on valuation multiples (P/E) rather than in reaction to a decline in earnings (in fact global EPS have increased slightly during 2022). Hence, we conclude that markets have not yet priced in the possibility of lower earnings and fear that recession will cause further downside in equities (we also ran the same exercise using forward looking EPS estimates and the result was broadly the same). **Figure 21** made clear the link between economic and earnings growth and we wouldn't be surprised to see equity markets test the lows that were established in mid-June, although falling long-term bond yields may offer some support. Hence, the more cyclical parts of equity markets may suffer the most.

Figure 26 – Decomposed global equity capital returns versus bond yields YTD

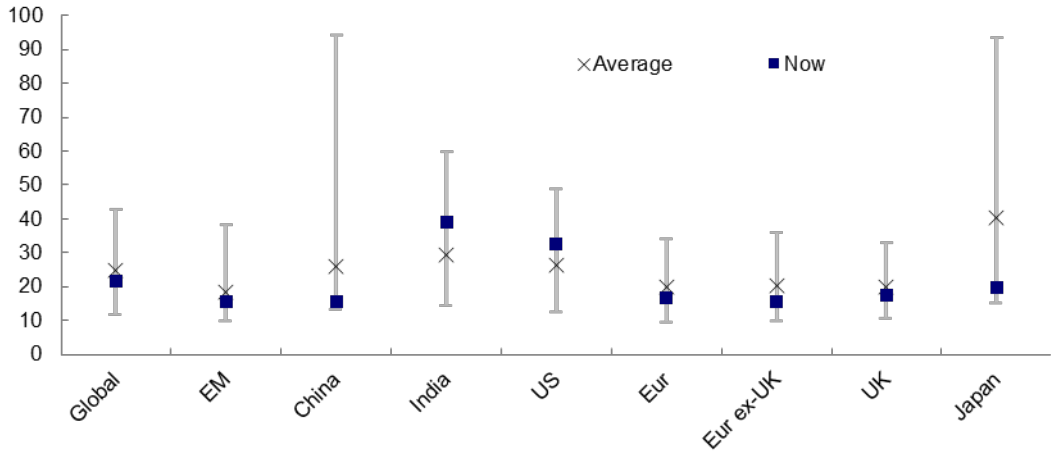


Notes: **Past performance is no guarantee of future returns.** Daily data from 31 December 2021 to 31 August 2022. Chart shows the cumulative change in price/earnings ratios and EPS (earnings per share) for the Datastream Total Market World index since 31 December 2021. Capital returns are the sum of earnings growth and the change in P/E ratios. The sovereign bond yield is represented by the yield-to-maturity of the ICE BofA Global Government Bond Index. All data shown in US dollar terms. Source: Refinitiv Datastream and Invesco

Non-US equity markets look the most attractive

Comparing across regions, **Figure 27** suggests the cheapest equity valuations are to be found outside the US (except India). Within EM, Chinese equities look attractive (in our opinion), especially considering that China has effectively been in recession this year, which we think offers the possibility of improvement due to policy support. Relatively attractive valuations can also be found in Europe and Japan, both of which are now reaping the competitive benefit of a strong dollar (we think the economic risks are lower in Japan due to lower inflation and less energy reliance on Russia).

Figure 27 – Historical ranges for equity market CAPEs



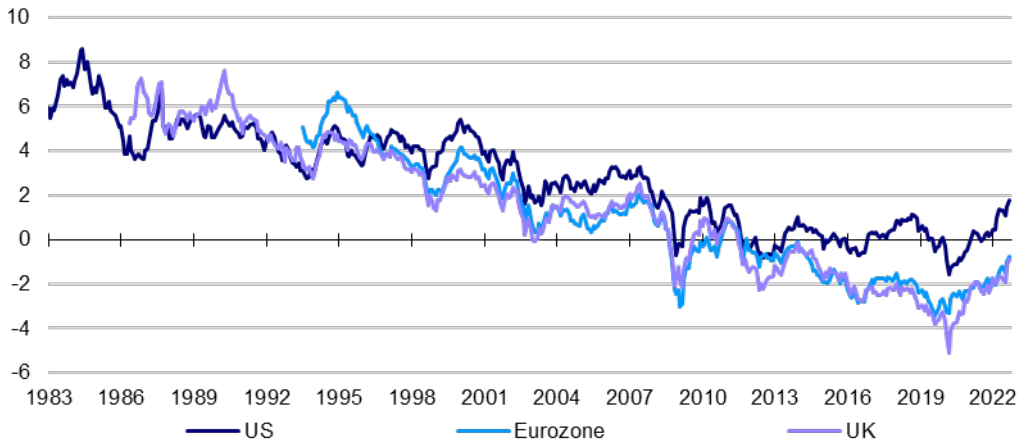
Note: CAPE = Cyclically Adjusted Price/Earnings and uses a 10-year moving average of earnings. Based on daily data from 3 January 1983 (except for China from 1 April 2004, India from 31 December 1999 and EM from 3 January 2005), using Datastream indices. As of 31 August 2022.
Source: Refinitiv Datastream and Invesco

Yield gaps suggest government bonds are more attractive relative to equities

Figure 27 also suggests that global equity valuations are close to historical norms but says nothing about the comparison with other asset classes. **Figure 28** shows that the yield gap between government bonds and local equity dividend yields has widened in favour of bonds on both sides of the Atlantic. In the US, the gap is wider than at any time since March 2010, though in Europe the gap remains negative.

Whether bonds are now good value relative to equities is hard to say based on **Figure 28**. However, we can say that bonds are relatively better value than at the start of the year (and certainly versus March 2020 when those yield gaps bottomed). That improvement in the relative valuation of bonds is further underlined by the deterioration in the economic outlook (and worsening prospects for profits). Hence, since June we have been looking more favourably upon government bonds relative to cyclical assets.

Figure 28 – Yield gaps moving in favour of bonds (%)

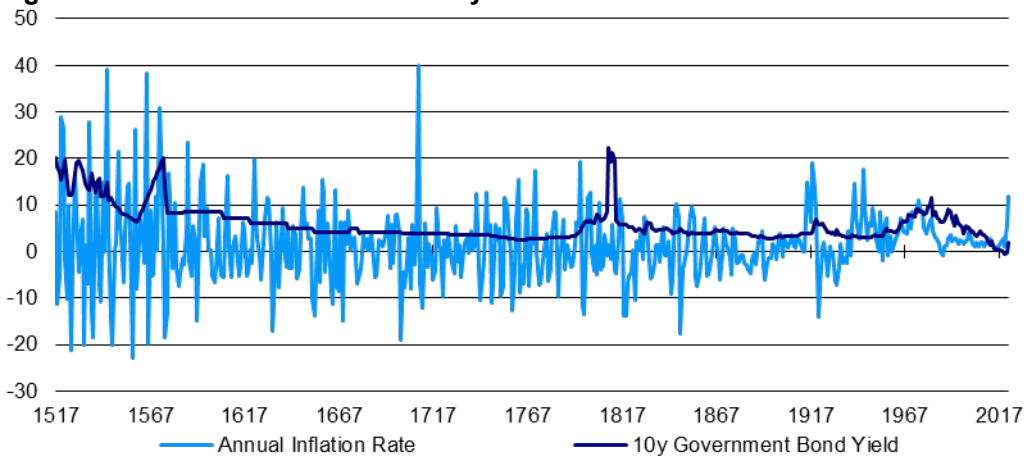


Note: **past performance is no guarantee of future results**. Monthly data from January 1983 to September 2022 (as of 14 September 2022). Yield gap is 10-year government bond yield minus equity dividend yield (based on Datastream equity indices). Source: Refinitiv Datastream and Invesco

Bond yields may be higher but remain low within a historical context

Though government bond yields have risen sharply during 2022, they are still well below historical norms, despite inflation being at multi-decade highs. **Figure 29** shows the example of the Netherlands, where the 10-year government yield is still close to 500-year lows. It is therefore hard to argue that bonds are good value in absolute terms.

Figure 29 – Dutch inflation and bond yield since 1517



Note: **Past performance is no guarantee of future results**. Based on annual data from 1517 to 2022 (using inflation as of August 2022 and 10-year bond yield as of 14 September 2022).
Source: Global Financial Data, Refinitiv Datastream and Invesco

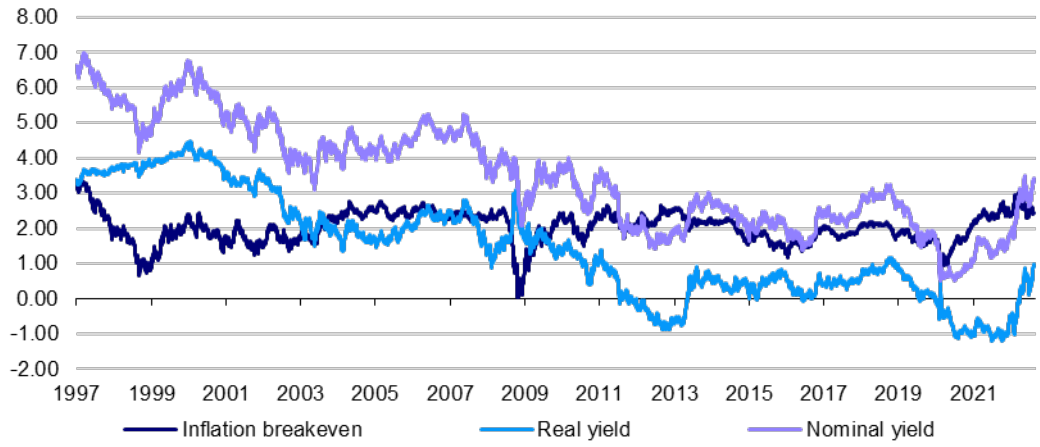
Real yields do not yet reflect long-term economic growth potential but could fall during recession

Figure 30 decomposes the 10-year US treasury yield into real and inflation components (based on TIPS yields). Unfortunately, inflation-adjusted treasuries were only introduced in 1997, so the historical comparison period is limited. Though the current 1% real yield appears generous judged by the period since 2011, it is still well below pre-GFC norms. We would normally expect long-maturity real yields to be in line with long-term economic growth potential, which we guess is close to 2.0%-2.5% for the US. Hence, if the Fed continues to reduce its holdings of treasuries, we suspect that real yields will trend higher over the medium to long-term. However, we would also expect those real yields to fluctuate with the economic cycle and recession could see them move lower.

Inflation expectations remain amazingly well anchored

Based on **Figure 30**, it would also appear that inflation expectations embedded in the treasury market ("Inflation breakeven") have peaked and that the rise in the nominal yield is entirely due to real component. The apparent anchoring of inflation expectations is impressive given the repeated upward surprises on inflation, including the recently reported CPI data for August. Whether looking at maturities of 5, 10 or 20 years, those inflation breakevens are contained within a 2.45%-2.65% range, suggesting a belief that inflation will come down rapidly. If not, we imagine that inflation breakevens will rise.

Figure 30 – US 10-year treasury yield decomposed (%)

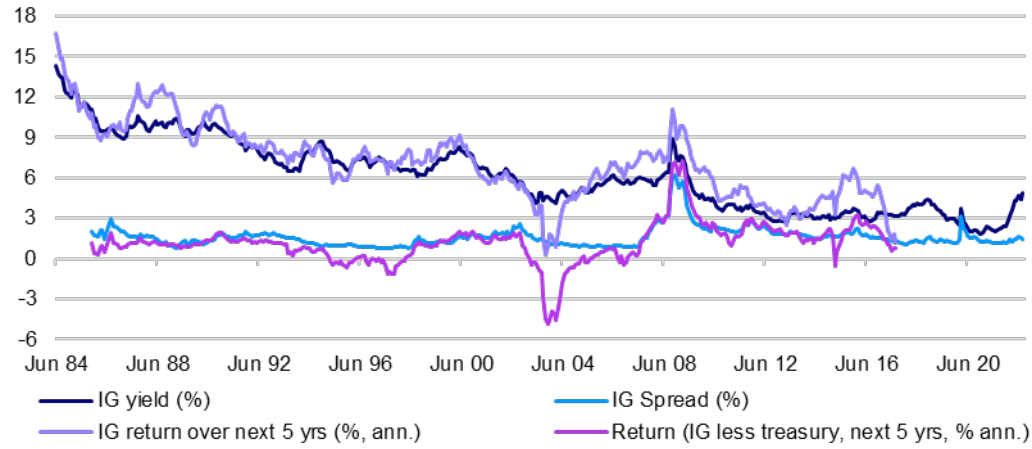


Note: **past performance is no guarantee of future results**. Daily data from 29 January 1997 to 14 September 2022. "Real yield" is the 10-year TIPS yield. Source: Refinitiv Datastream and Invesco

IG yields are up but spreads have hardly widened

As seen in **Figure 5** credit yields have risen more in recent months than yields on other asset categories. **Figure 31** shows that US investment grade yields are at the highest level since August 2009. This is encouraging, especially since future returns have historically been correlated to yield. However, that chart also shows that the spread versus US treasury yields has increased by much less and has been higher on many occasions in the last 10 years. Given the apparent correlation between that spread and the future returns on IG relative to treasuries, it is hard not to conclude that the prospects for IG may have improved in absolute terms but not relative to government bonds.

Figure 31 – US investment grade yields, spreads and returns



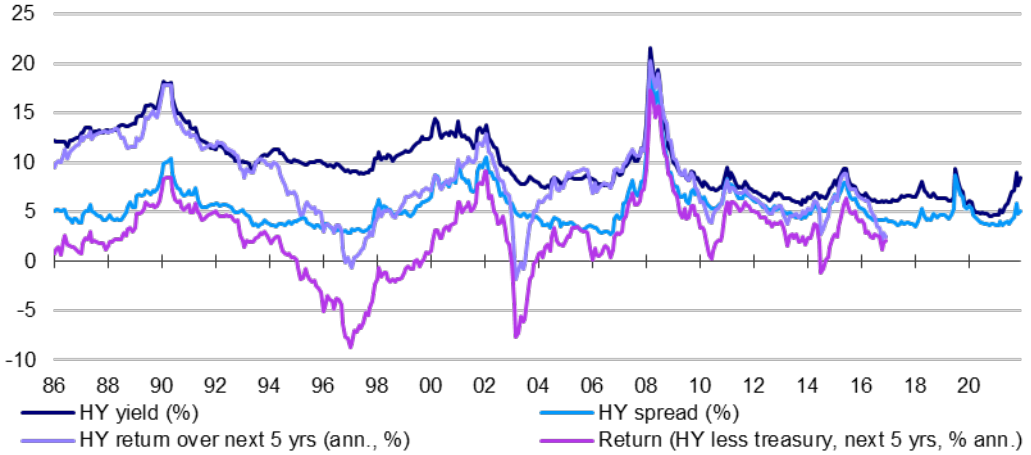
Note: **past performance is no guarantee of future returns**. Monthly data from June 1984 to August 2022 (as of 31 August). IG yield is based upon the ICE BofA US Corporate Index (yield to maturity) and IG spread is IG yield minus the yield to maturity on the ICE BofA US Treasury Index.
Source: ICE BofA, Refinitiv Datastream and Invesco

HY spreads have widened but are within the post-GFC norm

Figure 32 shows a bigger increase in the US HY yield and a more pronounced widening of the spread versus treasuries. However, both the yield and the spread are within the post-GFC range. Though there is some correlation between yields, spreads and future returns (both absolute and relative to treasuries), it doesn't appear as reliable as for IG. This is no doubt due to the cyclicality of HY via the effect of defaults. Without concern about the global economy and rising defaults, we would conclude that HY is more attractive than over the last two years but we are worried about the cycle, which tempers our enthusiasm.

Hence, among fixed income assets, we favour government bonds and IG credit. We are also attracted to EM debt, which we will explain later.

Figure 32 – US high yield credit yields, spreads and returns



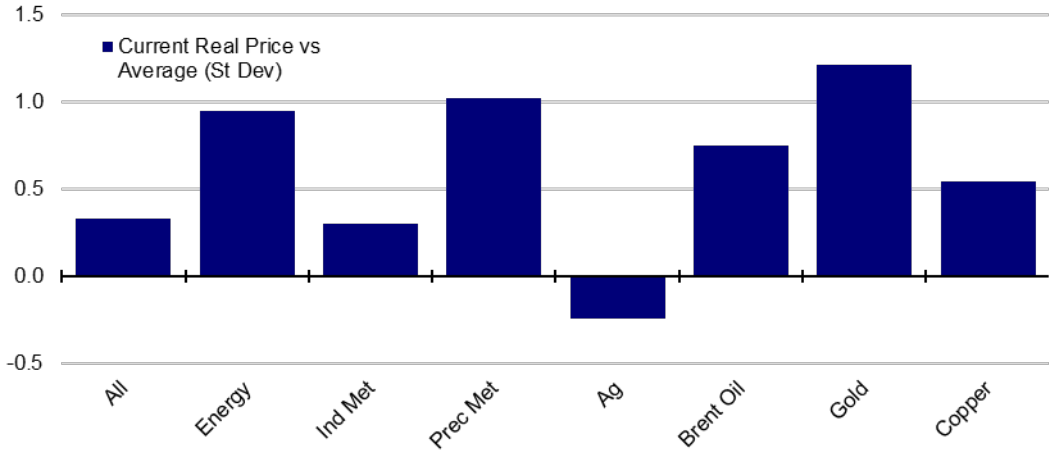
Note: **past performance is no guarantee of future returns**. Monthly data from September 1986 to August 2022 (as of 31 August). HY yield is based upon the ICE BofA US High Yield Index (yield to maturity) and HY spread is HY yield minus the yield to maturity on the ICE BofA US Treasury Index.
Source: ICE BofA, Refinitiv Datastream and Invesco

Commodities and currencies

Commodity prices have fallen but remain elevated

All commodity categories have weakened over the last three months (see **Appendix 2**). However, they all remain more expensive than usual when measured in real terms, except for agriculture (see **Figure 33**). Industrial commodities and agriculture could be supported if Russia-Ukraine inspired shortages reassert themselves but global economic slowdown is likely to depress demand for the former. Our 12-month projections show that we expect major commodity prices to weaken (see **Figures 39** and **40**).

Figure 33 – Commodity prices deflated by US CPI versus historical norms

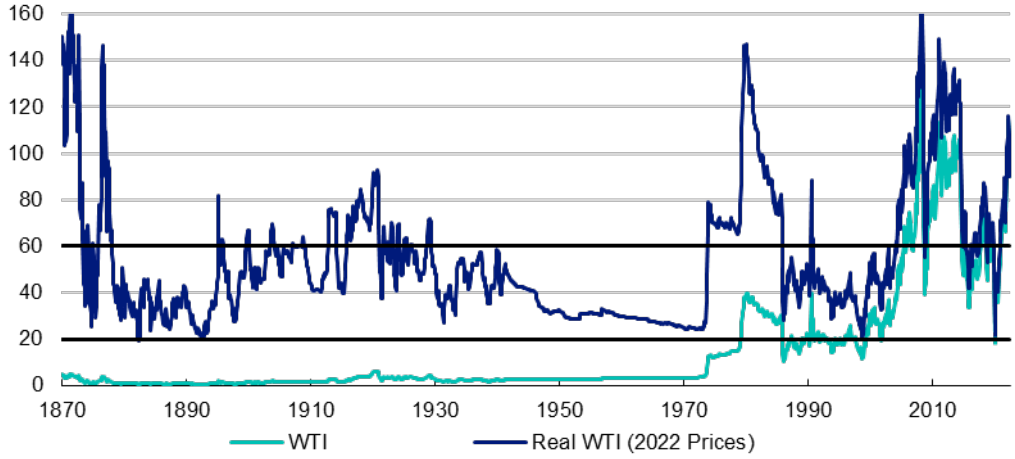


Abbreviations: "Ind Met" is industrial metals, "Prec Met" is precious metals and "Ag" is agriculture. Historical ranges start on: All and Ag 31/12/69; Energy 31/12/82; Ind Met 3/1/77; Prec Met 2/1/73; Brent 1/6/87; gold 1/1/74; copper 1/1/74. As of 31 August 2022. See appendices for definitions, methodology and disclaimers. Source: GSCI, Refinitiv Datastream, Invesco

Oil looks to have peaked for this cycle but natural gas is likely to stay elevated for longer

Figure 33 suggests that energy and precious metals sub-groups are the most elevated compared to historical norms. **Figure 34** shows how rarely oil has scaled recent peaks (measured in today's prices). These are exceptional times but so were the previous episodes, with demand/supply shocks usually explaining those peaks (Oil Creek Association in the 1860s/1870s, OPEC embargos in the 1970s/80s and the China growth shock of the early 2000s). Those 150 years suggest the oil price struggles to stay above $100 (in today's prices), because both demand and supply adjust to those higher prices, a scenario which now appears to be playing out. Natural gas, on the other hand is caught in a geopolitical struggle between Russia and Europe and is likely to remain elevated as winter approaches, before declining sharply next year (in our view).

Figure 34 – US oil price in real terms since 1870 (US$ per barrel, CPI adjusted)

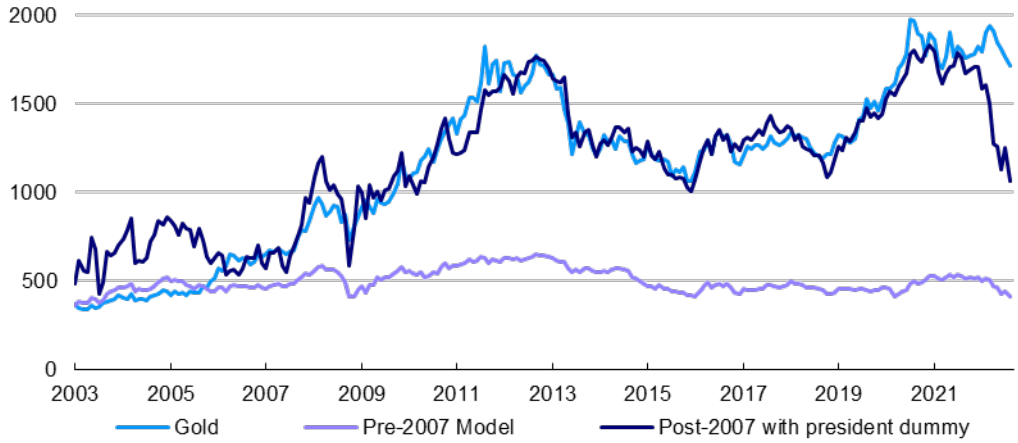


Note: **Past performance is no guarantee of future results.** Monthly data from January 1870 to August 2022 (as of 31 August 2022). WTI is West Texas Intermediate. Real WTI is calculated by dividing the price of WTI by an index of US consumer prices. Source: Global Financial Data, Refinitiv Datastream and Invesco

Gold could benefit from economic slowdown but already seems elevated

Gold hasn't fallen as much as our econometric model suggested given the rise in bond yields and the dollar (see **Figure 35**). Perhaps there has been a change in the way that gold reacts to inflation, with the negative correlation seen since the GFC reverting to positive (because deflation is no longer the concern). However, we note that if gold switched to its pre-GFC behaviour (rising with inflation), the model-suggested price would be even lower (see "pre-2007 Model" in **Figure 35**). In theory, the slowing of the global economy that we expect, and consequent peaking of bond yields, could support gold but we remain wary given the valuation gap shown in **Figure 35**.

Figure 35 – Gold versus model fair value (US$ per ounce)

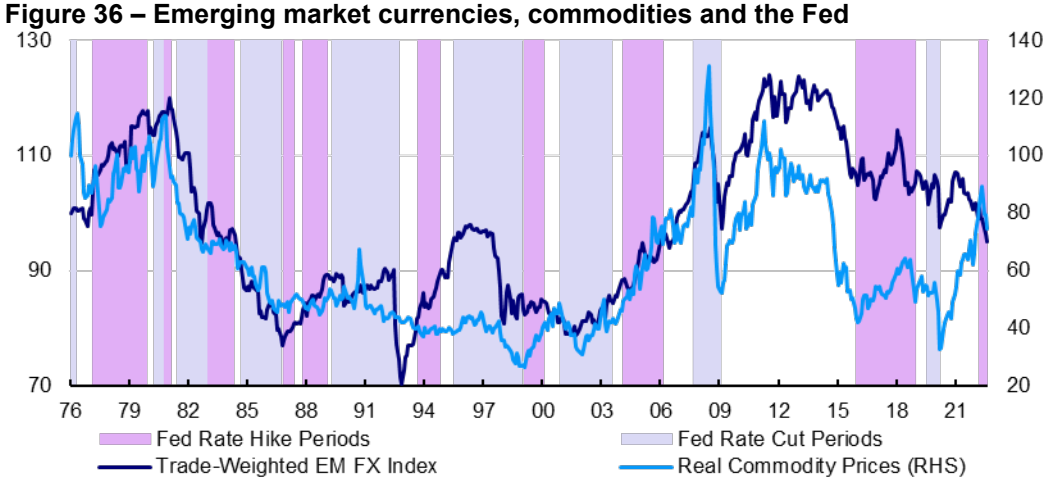


Notes: **Past performance is no guarantee of future results**. Monthly data from January 2003 to August 2022 (as of 31 August 2022). Gold is modelled as a function of real 10-year US Treasury yield, 10-year US inflation breakeven and trade-weighted USD. "Pre-2007 Model" is based on data from 31 January 1997 to 31 December 2006. "Post-2007 Model" is based on data from 31 January 2007 to 30 April 2020. "President dummy" is a dummy variable that was set at zero prior to November 2016 (when President Trump was elected) and one thereafter. **There is no guarantee that these views will come to pass.**
Source: Refinitiv Datastream and Invesco

EM currencies haven't fully reflected the rise in commodity prices

Figure 36 suggests a good historical relationship between our EM FX index and commodity prices, though EM currencies failed to follow commodities higher during 2022. Either commodity prices were expected to come down again quickly or EM currencies have some catching up to do. Perhaps Fed tightening is the missing link, though **Figure 36** suggests no consistent relationship between Fed policy and EM FX.

Figure 36 – Emerging market currencies, commodities and the Fed

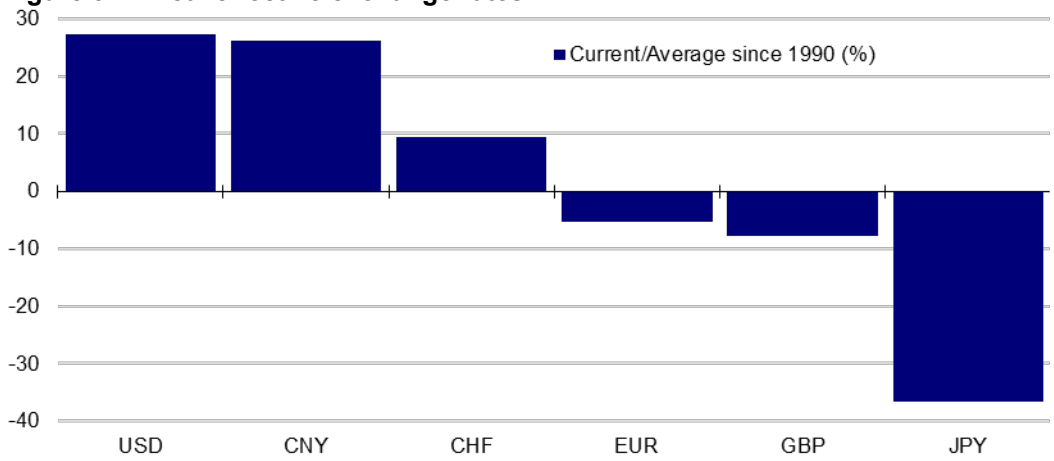


Note: **Past performance is no guarantee of future results.** Monthly data from January 1976 to August 2022. Real trade-weighted EM FX index is a trade weighted average of national currencies versus US dollar (trade weights are based on total trade flows for each country). There are 18 currencies in the EM basket – those of China, Brazil, South Korea, Mexico, Singapore, India, Russia, Poland, Thailand, Turkey, Czech Republic, Malaysia, Indonesia, Hungary, Philippines, South Africa, Chile and Nigeria. Real adjustments use national CPI indices versus that of the US. Real commodity price index is based on the S&P GSCI Commodity Spot Price Index, adjusted by the US CPI index. All indices rebased to 100 as of January 1976. As of 31 August 2022.
Source: IMF, OECD, Oxford Economics, S&P GSCI, Bloomberg L.P., Refinitiv Datastream, Invesco.

USD more expensive than usual in real trade-weighted terms and JPY looks cheap

When it comes to major currencies, the big valuation contrast is between USD and JPY (see **Figure 37**). The Japanese currency continues to look cheap in real terms (compared to historical norms) and we expect it to be among the better performing currencies over the medium term. However, lack of tightening action from the Bank of Japan is penalising it right now.

Figure 37 – Real effective exchange rates*



*Currency indices measured against a trade-weighted basket of currencies and adjusted for inflation differentials. As of 31 July 2022. Source: OECD, Datastream and Invesco

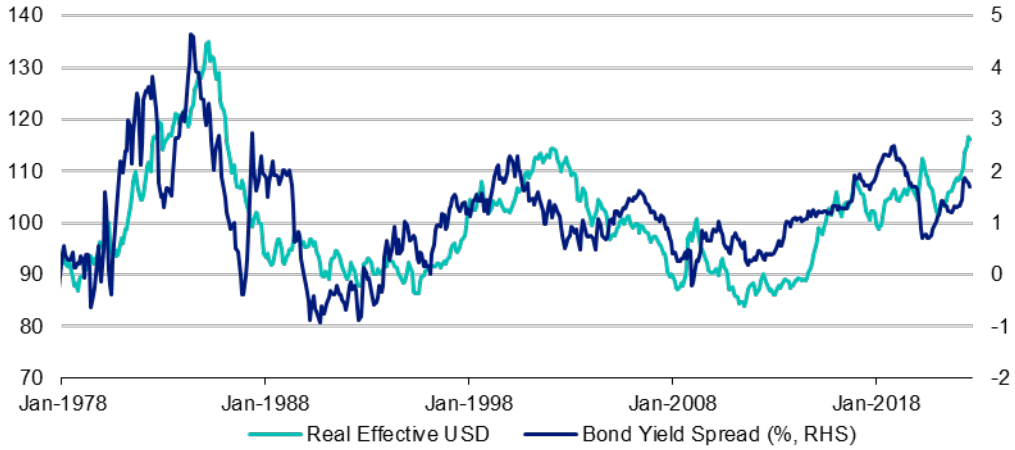
There are many reasons why the dollar could weaken over the long term…

The US is a serial current account deficit country, which implies that it continues to add to its overseas liabilities (it is a already big net international debtor). That, and the fact that it is as expensive as at any time since early 1986 (see **Figure 38**), suggests the dollar could depreciate over the long term. The problem is that currencies tend to overshoot, so calling turning points is a perilous exercise.

…and yield spreads are no longer providing support

However, **Figure 38** also suggests that short-term movements in the real trade-weighted value of the dollar are correlated to the spread between US bond yields and those of other countries. As the Fed turned from running a very loose ship to tightening rapidly earlier in 2022, the spread between US and other yields widened, thus supporting the dollar. However, we note that the dollar has continued to appreciate in recent months despite a narrowing of the yield gap (as other central banks catch up with the Fed). We doubt that this disconnect can endure and expect the dollar to weaken over the next 12 months (see **Figure 39**).

Figure 38 – Real effective US dollar and bond yield spread



Note: **Past performance is no guarantee of future results**. Monthly data from January 1980 to August 2022. Real effective US dollar is an index calculated by the OECD as the trade weighted value of the US dollar versus a basket of currencies and adjusted for CPI inflation differentials. Bond yield spread is the US 10-year treasury yield minus the average of the 10-year government yields of: Germany, Japan and the UK. As of 31 August 2022. Source: OECD, Refinitiv Datastream and Invesco.

Projections for the next year

Recession risk is elevated

With some central banks tightening aggressively to fight inflation, we believe the risk of recession is elevated, especially since economies are already slowing (due to that higher inflation). At the same time, bond yields have risen dramatically, which has changed the investment landscape (when considering yields available across assets).

We assume aggressive central banks, less growth and less inflation

Underpinning our projections for the next 12 months are the following assumptions:

- Global GDP growth slips to 2% with some economies in recession
- Global inflation will fall but remain above many central bank targets
- The Fed, ECB and BOE hike aggressively; rates peak in 2023 H1 (PBOC loosens)
- Long-term government bond yields peak and yield curves flatten
- Credit spreads widen and defaults rise
- Equity dividend growth moderates and equity yields rise slightly
- Real estate (REIT) dividend growth moderates and yields rise slightly
- Commodities struggle as global economy slows (except agricultural products)
- USD weakens as Fed tightening ends

Long-term yields may have risen enough

The assumptions behind our projections are laid out in **Appendix 4**, while **Figure 39** shows the implied market targets. Perhaps the single most important forecast is the aggressiveness of Fed, which we presume will raise rates to 4.00% by the end of 2022 but will then be persuaded by a slowing economy and falling inflation to pause its tightening (the BOE is assumed to be even more aggressive). Likewise, we expect that slowdown to allow 10-year treasury yields to stabilise, provoking a flattening yield curve. Yields in Europe are presumed to fall even more due to the risk of recession.

Equity and REIT yields may rise slightly, and dividends grow less

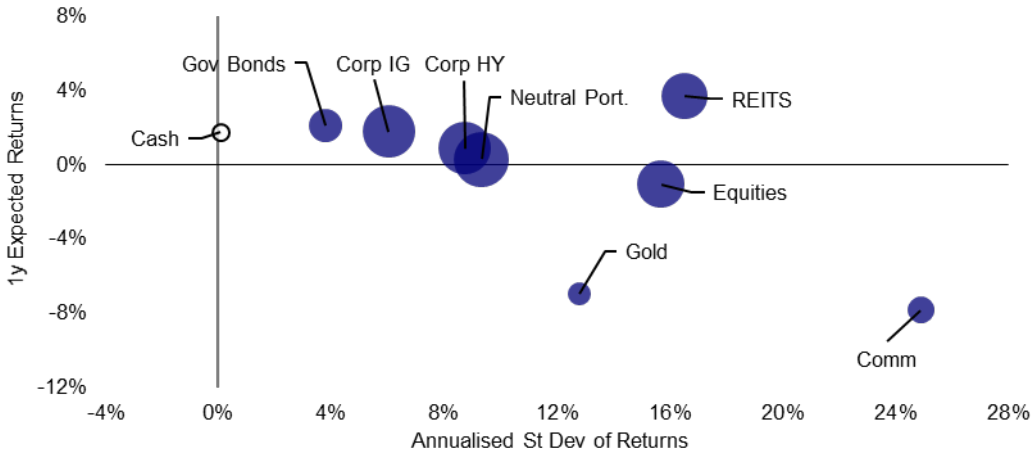
Yields on equities and real estate will face competing forces: we expect the threat of recession to push them to the upside but we think this will be balanced to some extent by falling bond yields. Overall, we expect a slight rise in equity and real estate yields in most regions. We also expect less dividend growth, though we believe that inflation may help real estate rental income, while penalising equity dividends (via the squeeze on profits).

Figure 39 – Market forecasts

		Current (31/08/22*)	Forecast 12-month
Central Bank Rates	US	2.50	4.00
	Eurozone	0.00	1.50
	China	4.35	4.00
	Japan	-0.10	0.00
	UK	1.75	4.25
10yr Bond Yields	US	3.15	3.30
	Eurozone	1.48	1.40
	China	2.65	3.00
	Japan	0.23	0.20
	UK	2.80	3.15
Exchange Rates/US$	EUR/USD	1.01	1.10
	USD/CNY	6.89	6.70
	USD/JPY	138.97	125.00
	GBP/USD	1.16	1.25
	USD/CHF	0.98	0.90
Equity Indices	S&P 500	3955	3700
	Euro Stoxx 50	3517	3300
	FTSE A50	13573	14600
	Nikkei 225	28092	29000
	FTSE 100	7284	7150
Commodities (US$)	Brent/barrel	97	80
	Gold/ounce	1720	1600
	Copper/tonne	7846	7200

Notes: * except for central bank rates which take account of subsequent changes. **There is no guarantee that these views will come to pass**. See Appendices for definitions, methodology and disclaimers. Source: Refinitiv Datastream and Invesco Global Market Strategy Office

Figure 40 – Projected 12m return versus risk for global assets



Based on local currency returns. Returns are projected but standard deviation of returns is based on 5-year historical data. Size of bubbles is in proportion to average pairwise correlation with other assets. Cash is an equally weighted mix of USD, EUR, GBP and JPY. Neutral portfolio weights shown in **Figure 3**. As of 31 August 2022. **There is no guarantee that these views will come to pass**. See Appendices for definitions, methodology and disclaimers. Source: BAML, MSCI, GSCI, FTSE, Refinitiv Datastream and Invesco

We expect REITs to be the most remunerative asset, followed by government bonds

The return projections shown in **Figure 40** are overall lower than three months ago (inflation has proved more persistent than we expected and central banks are more aggressive, so we expect higher government yields). The only assets for which our projections have improved are cash (rates are higher) and commodities (prices have fallen a lot). Among fixed income assets, we expect the highest returns on government bonds (we think credit will be handicapped by widening spreads and rising defaults). We continue to expect the highest (though limited) returns on real estate (REITs). With central banks removing support, we think the investment outlook will remain challenging.

Optimisation favours government bonds and IG

Trying to construct a diversified multi-asset portfolio on the back of our projections requires more than simply choosing our favourite assets: after all, we may be wrong! We use an optimisation process to help do that and **Figure 41** shows the results. The outcome favours government bonds and IG (with the outcome for cash and real estate depending upon what is being maximised – Sharpe Ratio or returns).

Cash boosted; equities reduced

Within our Model Asset Allocation, we follow the suggestions of the optimiser in direction but not necessarily magnitude. We maintain an Overweight stance in government bonds and IG, while taking cash further Overweight at the expense of equities (further Underweight). Otherwise, we make no changes, sticking to an Overweight position in real estate (REITs) and zero allocations to HY, gold and commodities.

Figure 41 – Optimised allocations for global assets (using local currency returns)

	Neutral Portfolio	Policy Range	Projected Returns	Optimisations Sharpe Ratio	Optimisations Max Return	Model Asset Allocation*	
Cash & Gold	5%	0-10%	-2.7%	10%	0%	↑	8%
Cash	2.5%	0-10%	1.7%	10%	0%	↑	8%
Gold	2.5%	0-10%	-7.0%	0%	0%		0%
Govt Bonds	25%	10-40%	2.1%	40%	40%		30%
Corporate IG	10%	0-20%	1.8%	17%	19%		15%
Corporate HY	5%	0-10%	0.9%	0%	0%		0%
Equities	45%	25-65%	-1.0%	25%	25%	↓	37%
Real Estate	8%	0-16%	3.7%	8%	16%		10%
Commodities	2%	0-4%	-7.8%	0%	0%		0%

Notes: Based on local currency returns (for both the one-year projected returns and five-year historical covariance matrix). Cash is an equally weighted mix of USD, EUR, GBP and JPY. "Sharpe Ratio" shows the results of maximising the Sharpe Ratio. "Max Return" maximises returns while not exceeding the volatility of the Neutral Portfolio. *This is a theoretical portfolio and is for illustrative purposes only. It does not represent an actual portfolio and is not a recommendation of any investment or trading strategy. See appendices for definitions, methodology and disclaimers. Source: Invesco Global Market Strategy Office

Model Asset Allocation: contraction phase => more cash and less equities

We go further Overweight cash by reducing equities

Yields have again risen on all assets but we think this is largely compensating for greater policy risk and/or recession. We believe that cash stands out as now offering higher rates and attractive diversification qualities (limited volatility and no correlation to other assets). We boost cash to further Overweight, while reducing equities to further Underweight within our Model Asset Allocation (see **Figure 41**). The relatively conservative stance within the Model Asset Allocation is balanced by having a regional bias toward EM assets. Though we think the US dollar is expensive, we are not hedging our USD exposure as we are Underweight US assets (see **Figure 3** for regional detail).

Cash, the great diversifier, now offers some return

Policy rates continue to rise and we expect major central bank rates in the US and Europe) to continue rising sharply over the coming months, taking them to levels not seen since 2008. Hence, **cash**, which has been a great diversifier over recent years (no volatility nor correlation to other assets), is now also offering more compensation than for some time. Given all the uncertainties about inflation, central bank policy and the growth outlook, we expect cash to outperform many other assets, especially on a risk-adjusted basis. We therefore boost cash to an Overweight 8% from 5% (versus Neutral 2.5%).

We go further Underweight equities, with a preference for EM (especially China)

Equity prices rebounded from mid-June lows but appear to be on the slide again at the time of writing. Though dividend yields have risen, and some regions look attractive to us on a cyclically adjusted P/E basis, we worry about the economic and profit outlook. We thus reduce the **equity** allocation to a further Underweight 37% from the previous 40% (versus Neutral 45%). We are wary of going too far Underweight given the extent to which equities have fallen this year. We were already at the maximum allocation to Chinese and EM equities, which we believe are good value (see **Figure 27**). We have reduced the allocations to the US (to further Underweight) and to the UK (to Neutral).

Long-term government bonds are relatively attractive

Government bond yields have risen sharply this year and in the US are at levels not seen for more than a decade. These yields are now more attractive than they were relative to those on equities. Believing that recession risks are growing, we maintain an Overweight stance on **government bonds** (30% versus Neutral 25%). However, we fear that aggressive central bank tightening will continue to force short-term yields higher, thus forcing an inversion of many yield curves. We remain Overweight EM government bonds (though have been absent Chinese sovereign bonds since June 2022) and raise allocations to the US and Eurozone (both Overweight), while eliminating the UK allocation (the BOE is now expected to be the most aggressive central bank).

Credit spreads could widen further

Credit spreads have widened but are not reflecting the risk of recession, in our opinion. Hence, we believe that spreads can widen further, especially for HY, where we also expect to see an increase in defaults if recession occurs. We make no changes to the credit allocations, with **IG** remaining at an Overweight 15% (versus Neutral 10%) and **HY** remaining at zero.

We continue to prefer real estate to equities

Real estate remains at an Overweight 10% (versus Neutral 8%), though we reduce the outperforming Japanese allocation from Neutral to zero and EM goes from an Overweight 4% to a less Overweight 2%. We boost the allocations to the underperforming Europe ex-UK region and to the US (both to Overweight).

We remain absent commodities

Commodities suffered during the most recent three months, having had an excellent start to the year. We think they remain expensive compared to historical norms and fear that recession would cause further damage to industrial commodities. We therefore remain zero allocated. The same applies to **gold**, which we find expensive, though we admit it could find support if bond yields and the dollar fall.

EM favoured

Regionally, we favour EM assets. This is largely because we think they are cheap (relative to both other regions and their own history). EM assets also serve as our hedge in case central banks tighten less and ease sooner than we expect.

No currency hedges

Finally, though we believe the US dollar is overvalued, we have not hedged our US dollar position given that we are Underweight US assets.

Our base case is that we are in contraction

Risks to our outlook

Our central scenario is that we are in a contraction regime that usually favours defensive assets such as government bonds. However, we need to consider how we could be wrong and what difference that would make to asset performance. Though there are a multitude of possibilities, we consider two alternative scenarios:

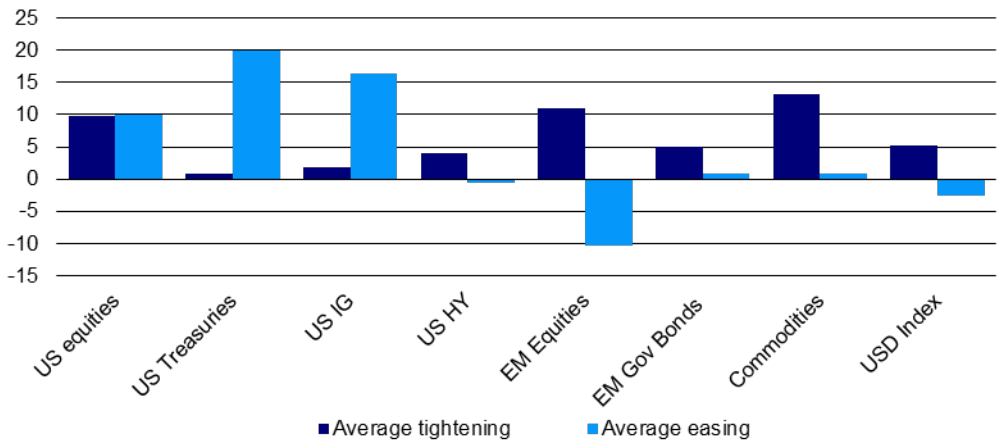
Alternative #1: inflation stays higher for longer

- **Inflation stays higher for longer**
  - We suppose this would cause central banks to be even more aggressive, raising bond yields higher than we expect, particularly at the short end.
  - We believe this would increase the risk and depth of recession, thereby widening credit spreads and increasing default rates.
  - We also suppose that business profits and real estate rentals will suffer.
  - We would be even more favourable towards defensive assets such as cash and government bonds (especially longer maturity) and would be extremely wary of riskier assets such as equities, real estate and credit.
  - Despite higher inflation, we believe industrial commodities would be weakened by deep recession, while gold would be hit by rising bond yields.
  - From a regional perspective, we believe such a dramatic scenario would benefit the US dollar (the Fed would be even more aggressive) and US assets. We suspect that Asia (including China and Japan) could be sheltered to some extent under such a scenario due to their low inflation, thus allowing their equity markets to outperform.

Alternative #2: inflation falls rapidly

- **Inflation falls rapidly**
  - We believe central bank peak rates would be lower than in the central scenario and easing would come sooner.
  - We think this would reduce the risk and depth of recession, thus favouring cyclical assets versus cash and government bonds.
  - We think the USD would depreciate and that EM assets would outperform. Given that this tightening cycle has been abnormal (with riskier assets suffering), we suspect rapid easing would bring relief to those riskier assets (see **Figure 42** to compare asset returns in tightening and easing cycles).

Figure 42 – Annualised USD total returns during Fed rate cycles (%)

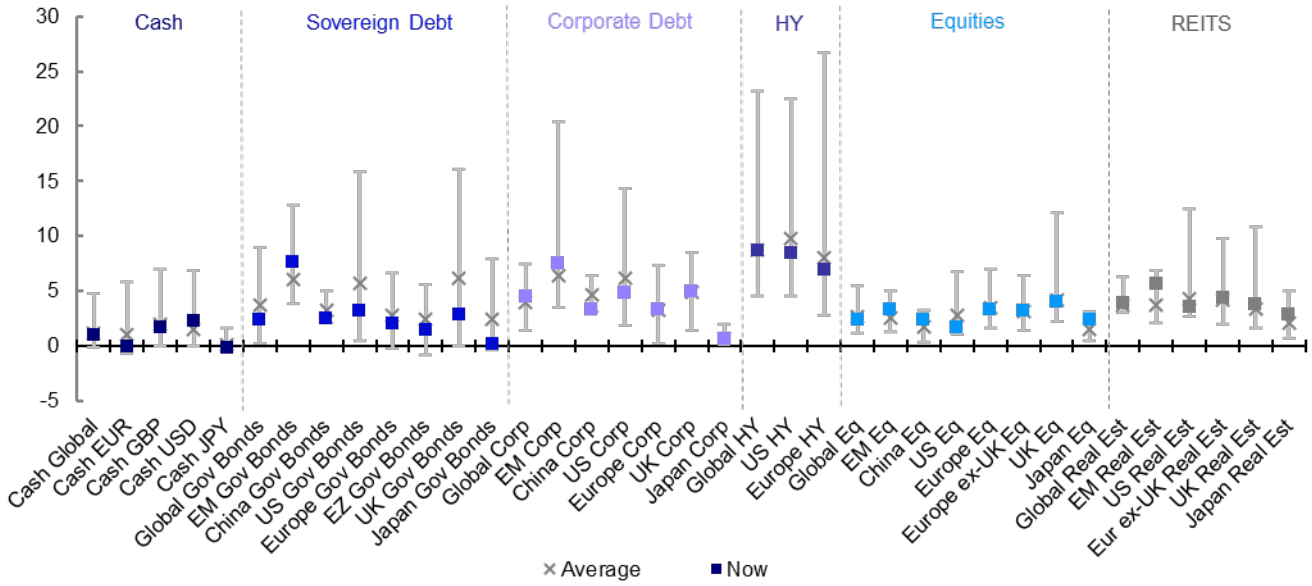


Note: **past performance is no guarantee of future results**. Based on monthly total return indices in US dollars from April 1980 to August 2022 (as of 11 August 2022). The following indices are used: MSCI USA (US equities), Datastream US Benchmark 10 Year (US treasuries), ICE BofA US Corporate Master (US IG), ICE BofA US HY Master II (US HY), MSCI Emerging Markets (EM Equities), JP Morgan EMBI Global Composite (EM Gov Bonds until 2015), Bloomberg EM USD Aggregate Sovereign (EM Gov Bonds from 2015), S&P GSCI Commodity Total Return (Commodities), Federal Reserve US Dollar Major Currency Index (USD Index). We identify six previous Fed tightening episodes starting in March 1983 (except for US HY which covers five episodes starting in November 1986 and EM Equities and EM Gov Bonds which cover four episodes starting in January 1994). "Average tightening" shows the annualised return averaged across those episodes, excluding the current tightening cycle. We identify eight previous easing cycles, starting in April 1980, except for US HY and EM Equities which cover five episodes starting in May 1989 and EM Gov Bonds which covers four episodes starting in June 1995. "Average easing" shows the annualised return averaged across those episodes. Source: Bloomberg, ICE BofA, JP Morgan, MSCI, S&P GSCI, Refinitiv Datastream and Invesco

Appendices

Appendix 1: Global valuations vs history

Regional yields within historical ranges (%)



Notes: As of 31 August 2022. **Past performance is no guarantee of future results.** See appendices for definitions, methodology and disclaimers. Source: Bloomberg Barclays, BofAML, FTSE, Refinitiv Datastream and Invesco

Appendix 2: Asset class total returns

Data as at 31/08/2022		Current	Total Return (USD, %)				Total Return (Local Currency, %)			
	Index	Level/RY	3m	YTD	12m	5y*	3m	YTD	12m	5y*
Equities										
World	MSCI	623	-5.5	-17.5	-15.5	7.5	-3.7	-14.2	-11.4	8.7
Emerging Markets	MSCI	970	-6.3	-17.2	-21.5	1.0	-3.1	-12.3	-15.4	3.6
China	MSCI	64	-3.2	-19.4	-28.1	-2.2	-2.7	-17.9	-26.7	-2.1
US	MSCI	3878	-3.7	-17.1	-13.1	11.8	-3.7	-17.1	-13.1	11.8
Europe	MSCI	1613	-11.3	-21.6	-21.0	1.8	-5.8	-11.3	-8.3	4.6
Europe ex-UK	MSCI	1959	-11.6	-24.7	-24.7	1.9	-6.6	-15.6	-13.1	4.9
UK	MSCI	1020	-10.5	-10.8	-7.6	1.5	-3.1	3.9	9.2	3.6
Japan	MSCI	3045	-5.1	-17.7	-18.7	2.3	2.3	-0.9	2.6	7.2
Government Bonds										
World	BofA-ML	2.52	-5.7	-17.0	-19.6	-2.4	-2.1	-9.8	-10.7	-0.4
Emerging Markets (USD)	BBloom	7.68	-6.0	-24.4	-26.7	-2.5	-6.0	-24.4	-26.7	-2.5
China	BofA-ML	2.47	-1.7	-4.3	-1.3	4.0	1.8	3.6	5.2	4.9
US (10y)	Datastream	3.32	-1.8	-12.9	-13.7	0.5	-1.8	-12.9	-13.7	0.5
Europe	Bofa-ML	2.24	-9.1	-23.4	-27.5	-4.0	-3.1	-13.4	-14.9	-0.8
Europe ex-UK (EMU, 10y)	Datastream	1.70	-8.9	-23.7	-28.0	-4.6	-3.0	-13.7	-15.5	-1.3
UK (10y)	Datastream	3.10	-12.4	-25.9	-28.6	-3.6	-5.1	-13.7	-15.6	-1.6
Japan (10y)	Datastream	0.25	-6.5	-17.6	-21.6	-4.4	0.8	-0.7	-1.0	0.1
IG Corporate Bonds										
Global	BofA-ML	4.59	-4.4	-16.3	-18.0	-0.5	-2.5	-12.9	-13.8	0.5
Emerging Markets (USD)	BBloom	7.56	-4.1	-22.7	-26.8	-0.1	-4.1	-22.7	-26.8	-0.1
China	BofA-ML	3.28	-2.1	-4.7	-2.0	3.6	1.4	3.1	4.5	4.5
US	BofA-ML	5.01	-2.1	-13.7	-14.5	1.1	-2.1	-13.7	-14.5	1.1
Europe	BofA-ML	3.39	-9.2	-22.2	-26.0	-4.4	-3.2	-12.0	-13.2	-1.2
UK	BofA-ML	5.23	-13.7	-28.8	-31.1	-3.0	-6.5	-17.1	-18.5	-1.0
Japan	BofA-ML	0.63	-7.4	-17.8	-21.6	-4.3	-0.2	-1.0	-1.1	0.2
HY Corporate Bonds										
Global	BofA-ML	8.53	-5.1	-14.7	-16.1	0.8	-3.7	-12.3	-13.0	1.6
US	BofA-ML	8.22	-3.6	-11.0	-10.4	2.4	-3.6	-11.0	-10.4	2.4
Europe	BofA-ML	6.99	-9.4	-22.1	-25.3	-3.0	-3.5	-11.9	-12.3	0.3
Cash (Overnight LIBOR)										
US		2.32	0.4	0.5	0.6	1.1	0.4	0.5	0.6	1.1
Euro Area		-0.01	-6.4	-11.8	-15.2	-3.8	-0.1	-0.3	-0.5	-0.5
UK		1.80	-7.5	-13.6	-15.0	-1.7	0.4	0.6	0.6	0.4
Japan		-0.08	-7.4	-17.2	-20.9	-4.7	0.0	-0.1	-0.1	-0.1
Real Estate (REITs)										
Global	FTSE	1697	-7.9	-19.2	-16.6	1.9	-1.8	-8.6	-2.1	5.4
Emerging Markets	FTSE	1376	-10.8	-14.3	-20.8	-5.5	-5.0	-3.1	-7.0	-2.3
US	FTSE	3204	-5.2	-18.7	-10.8	5.0	-5.2	-18.7	-10.8	5.0
Europe ex-UK	FTSE	2264	-21.3	-37.3	-42.1	-4.4	-16.2	-29.0	-32.0	-1.1
UK	FTSE	800	-19.3	-32.1	-30.9	-1.3	-12.6	-21.0	-18.2	0.8
Japan	FTSE	2195	-5.2	-12.1	-19.5	1.4	2.1	5.8	1.6	6.1
Commodities										
All	GSCI	3666	-10.2	32.1	42.2	10.2	-	-	-	-
Energy	GSCI	673	-10.5	56.7	72.6	12.1	-	-	-	-
Industrial Metals	GSCI	1559	-15.7	-14.1	-10.2	2.7	-	-	-	-
Precious Metals	GSCI	1912	-8.2	-8.4	-8.2	3.7	-	-	-	-
Agricultural Goods	GSCI	565	-11.0	13.2	20.7	7.9	-	-	-	-
Currencies (vs USD)**										
EUR		1.01	-6.3	-11.5	-14.8	-3.3	-	-	-	-
JPY		138.97	-7.4	-17.2	-20.8	-4.6	-	-	-	-
GBP		1.16	-7.7	-14.1	-15.5	-2.0	-	-	-	-
CHF		1.02	-1.9	-6.7	-6.4	-0.4	-	-	-	-
CNY		6.89	-3.2	-7.8	-6.2	-0.9	-	-	-	-

Notes: *Five-year returns are annualised. **The currency section is organised so that in all cases the numbers show the movement in the mentioned currency versus USD (+ve indicates appreciation, -ve indicates depreciation). **Past performance is no guarantee of future results**. Please see appendix for definitions, methodology and disclaimers. Source: Refinitiv Datastream and Invesco.

Appendix 3: Invesco 10-year Capital Market Assumptions (USD version)

	Asset Class	Index	Expected geometric return %	Expected arithmetic return %	Expected Risk %	Arithmetic return to risk ratio
Fixed income	US Treasury Short	BBG BARC US Treasury Short	2.6	2.6	1.5	1.71
	US Treasury Intermediate	BBG BARC US Treasury Intermediate	3.2	3.3	4.6	0.72
	US Treasury Long	BBG BARC US Treasury Long	2.4	3.1	12.0	0.26
	US TIPS	BBG BARC US TIPS	3.3	3.5	5.7	0.62
	US Bank Loans	CSFB Leverage Loan Index	7.6	7.9	8.4	0.95
	US Aggregate	BBG BARC US Aggregate	3.6	3.8	6.1	0.63
	US Inv Grd Corps	BBG BARC US Investment Grade	4.0	4.3	7.8	0.55
	US MBS	BBG BARC US MBS	3.9	4.2	6.6	0.63
	US Preferred Stocks	BOA ML Fixed Rate Pref Securities	5.1	5.8	12.4	0.47
	US High-Yield Corps	BBG BARC US High Yield	7.3	7.8	10.3	0.76
	US Muni	BOA ML US Muni	3.4	3.6	7.1	0.51
	US Muni (Taxable)	ICE BOA US Taxable Muni Securities Plus	3.7	4.0	8.0	0.49
	Global Aggregate	BBG BARC Global Aggregate	3.1	3.4	8.6	0.40
	Global Aggregate-Ex US	BBG BARC Global Aggregate- Ex US	3.6	3.9	7.0	0.55
	Global Treasury	BBG BARC Global Treasuries	3.5	4.0	10.4	0.38
	Global Sovereign	BBG BARC Global Sovereign	3.3	3.7	8.5	0.43
	Global Corporate	BBG BARC Global Corporate	3.6	3.9	8.0	0.49
	Global Inv Grd	BBG BARC Global Corporate Inv Grd	4.2	4.5	8.0	0.57
	Eurozone Corporate	BBG BARC Euro Aggregate Credit - Corporate	4.2	4.5	8.1	0.56
	Eurozone Treasury	BBG BARC Euro Aggregate Government - Treasury	4.3	5.2	13.5	0.38
	Asian Dollar Inv Grd	BOA Merrill Lynch ACIG	3.5	4.3	12.7	0.34
	Asian Dollar High Yield	BOA Merrill Lynch ACHY	4.4	4.7	8.3	0.57
	EM Aggregate	BBG BARC EM Aggregate	6.1	6.9	13.2	0.52
	EM Agg IG	BBG BARC EM USD Agg IG	4.1	4.5	8.9	0.51
	China Policy Bk & Tsy	BBG BARC China PB Tsy TR	3.3	3.4	4.5	0.75
	China RMB Credit	BBG BARC China Corporate	3.8	3.9	3.9	1.00
Equities	World Equity	MSCI ACWI	7.7	9.1	17.2	0.53
	World Ex-US Equity	MSCI ACWI Ex-US	7.9	9.5	18.9	0.50
	US Broad	Russell 3000	7.8	9.2	17.7	0.52
	US Large Cap	S&P 500	7.6	8.9	16.9	0.53
	US Mid Cap	Russell Midcap	8.4	10.1	19.7	0.51
	US Small Cap	Russell 2000	9.8	12.1	23.1	0.53
	MSCI EAFE	MSCI EAFE	7.4	9.0	18.7	0.48
	MSCI Europe	MSCI Europe	8.0	9.6	18.8	0.51
	Eurozone	MSCI Euro X UK	7.8	9.6	19.8	0.48
	UK Large Cap	FTSE 100	8.3	10.1	20.1	0.50
	UK Small Cap	FTSE Small Cap UK	9.7	12.5	25.8	0.48
	Canada	S&P TSX	6.3	8.2	20.4	0.40
	Japan	MSCI JP	5.7	7.9	22.6	0.35
	Emerging Market	MSCI EM	9.3	12.0	25.1	0.48
	Asia Pacific Ex JP	MSCI APXJ	8.7	11.4	25.2	0.45
	China Large Cap	CSI 300	8.9	13.8	34.8	0.40
Alternatives	US REITs	FTSE NAREIT Equity	7.6	9.2	18.7	0.49
	Global REITs	FTSE EPRA/NAREIT Developed Index	7.3	8.9	18.9	0.47
	Hedge Funds	HFRI HF Index	7.5	7.9	8.9	0.89
	Commodities	S&P GSCI	7.6	10.1	23.9	0.42
	Agriculture	S&P GSCI Agriculture	2.8	5.0	21.5	0.23
	Energy	S&P GSCI Energy	10.4	16.0	37.1	0.43
	Industrial Metals	S&P GSCI Industrial Metals	6.6	9.2	24.2	0.38
	Precious Metals	S&P GSCI Precious Metals	4.4	6.0	18.5	0.32

Notes: Estimates as of 30 June 2022, as published in Long-Term Capital Market Assumptions (August 2022). These estimates reflect the views of Invesco Investment Solutions, the views of other investment teams at Invesco may differ from those presented here. **There is no guarantee that these views will come to pass.** TIPS = treasury inflation protected securities, MBS = mortgage-backed securities.
Source: Invesco Investment Solutions

Appendix 4: Key assumptions

Key assumptions for 1-year projected returns

	US	Eurozone/ Europe ex-UK	UK	Japan	EM	China
Central bank rates (%)	4.00	1.50	4.25	0.00	-	4.00
Sovereign spreads vs rates (bps)	-25	50	-100	25	-	-
Corporate IG spreads vs sovereign (bps)	200	175	250	45	-	-
Corporate HY spreads vs sovereign (bps)	650	650	-	-	-	-
Corporate HY default rates (%)	4.0	4.0	-	-	-	-
Corporate HY recovery rates (%)	40	40	-	-	-	-
Equities dividend growth (%)*	5.0	0.0	3.0	7.0	5.0	3.0
Equities dividend yield (%)*	1.8	3.3	4.2	2.4	3.3	2.3
Real estate (REITS) dividend growth (%)*	5.0	3.0	5.0	2.0	2.0	-
Real estate (REITS) dividend yield (%)*	3.8	4.5	4.0	3.0	5.8	-

Notes: *assumptions for Europe ex-UK. One-year assumptions are based on our analysis of how current values compare to historical norms (assuming some degree of reversion to the mean, except where our analysis suggests historical norms are unlikely to be a guide to the future), adjusted for our view about the development of the economic and financial market cycles over the next year in each region. **There is no guarantee that these views will come to pass.**
Source: Invesco Global Market Strategy Office

Appendix 5: Methodology for asset allocation, expected returns and optimal portfolios

Portfolio construction process

The optimal portfolios are theoretical and not real. We use optimisation processes to guide our allocations around “neutral” and within prescribed policy ranges based on our estimations of expected returns and using historical covariance information. This guides the allocation to global asset groups (equities, government bonds etc.), which is the most important level of decision. For the purposes of this document the optimal portfolios are constructed with a one-year horizon.

Which asset classes?

We look for investibility, size and liquidity. We have chosen to include equities, bonds (government, corporate investment grade and corporate high-yield), REITs to represent real estate, commodities and cash (all across a range of geographies). We use cross-asset correlations to determine which decisions are the most important.

Neutral allocations and policy ranges

We use market capitalisation in USD for major benchmark indices to calculate neutral allocations. For commodities, we use industry estimates for total ETP market cap + assets under management in hedge funds + direct investments. We use an arbitrary 5% for the combination of cash and gold. We impose diversification by using policy ranges for each asset category (the range is usually symmetric around neutral).

Expected/projected returns

The process for estimating expected returns is based upon yield (except commodities, of course). After analysing how yields vary with the economic cycle, and where they are situated within historical ranges, we forecast the direction and amplitude of moves over the next year. Cash returns are calculated assuming a straight-line move in short term rates towards our targets (with, of course, no capital gain or loss). Bond returns assume a straight-line progression in yields, with capital gains/losses predicated upon constant maturity (effectively supposing constant turnover to achieve that). Forecasts of corporate investment-grade and high-yield spreads are based upon our view of the economic cycle (as are forecasts of credit losses). Coupon payments are added to give total returns. Equity and REIT returns are based on dividend growth assumptions. We calculate total returns by applying those growth assumptions and adding the forecast dividend yield. No such metrics exist for commodities; therefore, we base our projections on US CPI-adjusted real prices relative to their long-term averages and views on the economic cycle. All expected returns are first calculated in local currency and then, where necessary, converted into other currency bases using our exchange rate forecasts.

Optimising the portfolio

Using a covariance matrix based on monthly local currency total returns for the last 5 years and we run an optimisation process that maximises the Sharpe Ratio. Another version maximises Return subject to volatility not exceeding that of our Neutral Portfolio. The optimiser is based on the Markowitz model.

Currency hedging

We adopt a cautious approach when it comes to currency hedging as currency movements are notoriously difficult to accurately predict and sometimes hedging can be costly. Also, some of our asset allocation choices are based on currency forecasts. We use an amalgam of central bank rate forecasts, policy expectations and real exchange rates relative to their historical averages to predict the direction and amplitude of currency moves.

Appendix 6: Definitions of data and benchmarks

Sources: we source data from Refinitiv Datastream unless otherwise indicated.

Cash: returns are based on a proprietary index calculated using the Intercontinental Exchange Benchmark Administration overnight LIBOR (London Interbank Offer Rate). From 1st January 2022, we use the Refinitiv overnight deposit rate for the euro, the British pound and the Japanese yen. The global rate is the average of the euro, British pound, US dollar and Japanese yen rates. The series started on 1 January 2001 with a value of 100.

Gold: London bullion market spot price in USD/troy ounce.

Government bonds: Current values in the market forecast table (**Figure 39**) use Datastream benchmark 10-year yields for the US, Eurozone, Japan and the UK and the Thomson Reuters China benchmark 10-year yield for China. Historical and projected yields and returns (**Figures 1, 2, 4, 5, 25, 39, 40**) are based on Bank of America Merrill Lynch government bond indices with historical ranges starting on 31 December 1985 for the Global, Europe ex-UK, UK and Japanese indices, 30 January 1978 for the US and 31 December 2004 for China. The emerging markets yields and returns are based on the Barclays Bloomberg emerging markets sovereign US dollar bond index with the historical range starting on 28 February 2003. The same indices are used to construct Appendix 1.

Corporate investment grade (IG) bonds: Bank of America Merrill Lynch investment grade corporate bond indices with historical ranges starting on 31 December 1996 for the Global, 31 January 1973 for the US dollar, 1 January 1996 for the euro, 31 December 1996 for the British pound, 6 September 2001 for the Japanese yen and 31 December 2004 for the China indices. The emerging markets yields and returns are based on the Barclays Bloomberg emerging markets corporate US dollar bond index with the historical range starting on 28 February 2003.

Corporate high yield (HY) bonds: Bank of America Merrill Lynch high yield indices with historical ranges starting on 29 August 1986 for the US dollar, and 31 December 1997 for the Global and euro indices.

Equities: We use MSCI benchmark indices to calculate projected returns and calculate long-term total returns with historical ranges starting on 31 December 1969 for the Global, US, Europe ex-UK, UK and Japanese indices, 31 December 1987 for the emerging markets index and 31 December 1992 for the China index (**Figures 1, 2, 36 & 37**). Equity index valuations (**Figures 4, 5, 25, 27 and Appendix 1**) are based on dividend yields and price-earnings ratios using Datastream benchmark indices with historical ranges starting on 1 January 1973 for the Global, US, Europe ex-UK and Japanese indices, 31 December 1969 for the UK index, 2 January 1995 for the Emerging Markets index and 26 August 1991 for the China A-Shares index.

Real estate: We use FTSE EPRA/NAREIT indices with historical ranges starting on 29 December 1989 for the US, Europe ex-UK, UK and Japanese indices, 18 February 2005 for the Global index, and 31 October 2008 for the Emerging Markets index.

Commodities: Goldman Sachs Commodity Index with historical ranges starting on 31 December 1969 for the All Commodities and Agriculture indices, 31 December 1982 for the Energy index, 3 January 1977 for the Industrial Metals index, and 2 January 1973 for the Precious Metals index. “Industrial commodities” is oil & gas and industrial metals.

Definitions of data and benchmarks for Appendix 2

Sources: we source data from Datastream unless otherwise indicated.

Cash: returns are based on a proprietary index calculated using the Intercontinental Exchange Benchmark Administration overnight LIBOR (London Interbank Offer Rate). From 1st January 2022, we use the Refinitiv overnight deposit rate for the euro, the British pound and the Japanese yen. The global rate is the average of the euro, British pound, US dollar and Japanese yen rates. The series started on 1 January 2001 with a value of 100.

Gold: London bullion market spot price in USD/troy ounce.

Government bonds: Current levels, yields and total returns use Datastream benchmark 10-year yields for the US, Eurozone, Japan and the UK, and the Bank of America Merrill Lynch government bond total return index for China, the World and Europe. The emerging markets yields and returns are based on the Barclays Bloomberg emerging markets sovereign US dollar bond index.

Corporate investment grade (IG) bonds: Bank of America Merrill Lynch investment grade corporate bond total return indices and the Barclays Bloomberg emerging markets corporate US dollar bond total return index for emerging markets.

Corporate high yield (HY) bonds: Bank of America Merrill Lynch high yield total return indices

Equities: We use MSCI benchmark gross total return indices for all regions.

Commodities: Goldman Sachs Commodity total return indices

Real estate: FTSE EPRA/NAREIT total return indices

Currencies: Global Trade Information Services spot rates

Appendix 7: IIS Capital Market Assumptions methodology (Figure 6 & Appendix 3)

We show a summary of the Capital Market Assumptions produced by Invesco's Investment Solutions team (IIS) and this is a summary of their methodology.

Invesco Investment Solutions (IIS) employ a fundamentally based "building block" approach to estimating asset class returns. Estimates for income and capital gain components of returns for each asset class are informed by fundamental and historical data. Components are then combined to establish estimated returns. This is a summary of key elements of the methodology used to produce long-term (10-year) and medium term (5-year) estimates.

Fixed income returns are composed of the average of the starting (initial) yield and expected yield for bonds, estimated changes in valuation given changes in the Treasury yield curve, roll return which reflects the impact on the price of bonds that are held over time, and a credit adjustment which estimates the potential impact on returns from credit rating downgrades and defaults.

Equity returns are composed of: a dividend yield, calculated using dividend per share divided by price per share, buyback yield, calculated as the percentage change in shares outstanding resulting from companies buying back or issuing shares, valuation change, the expected change in value given the current Price/Earnings (P/E) ratio and the assumption of reversion to the long-term average P/E ratio, and the estimated growth of earnings based on the long-term average real GDP per capita and inflation.

Alternative returns are composed of a variety of public versus private assets with heterogenous drivers of return given their distinct nature. They range from a beta driven proxy to public markets or a bottom up, building block methodology like that of fixed income or equities, depending on whether they are more bond like or stock like.

Volatility estimates for the different asset classes are derived using rolling historical quarterly returns of various market benchmarks. Given that benchmarks have differing histories within and across asset classes, volatility estimates of shorter-lived benchmarks are normalised to ensure that all are measured over similar time periods.

For the full Capital Market Assumptions methodology, please contact the IIS team.

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