

# The Big Picture

## Global Asset Allocation 2022 Q3

Quarterly update  
From Invesco's Global Market Strategy Office

**19 June 2022**

Data as of 13 June 2022 unless stated otherwise



# The Big Picture

## Global Asset Allocation 2022 Q3

Major central banks are tightening aggressively, bond yields are up sharply and most asset prices are down. With US treasury yields at levels not seen in more than a decade, and our belief that global recession risks are growing, we choose to go Overweight government bonds within our Model Asset allocation (for the first time since 2016). We balance this by also going Overweight real estate. These changes are achieved by reducing equities (to Underweight), investment-grade credit (still Overweight), high-yield credit (to zero) and cash (Overweight). Across regions, we favour UK and emerging market (EM) assets.

### Model asset allocation

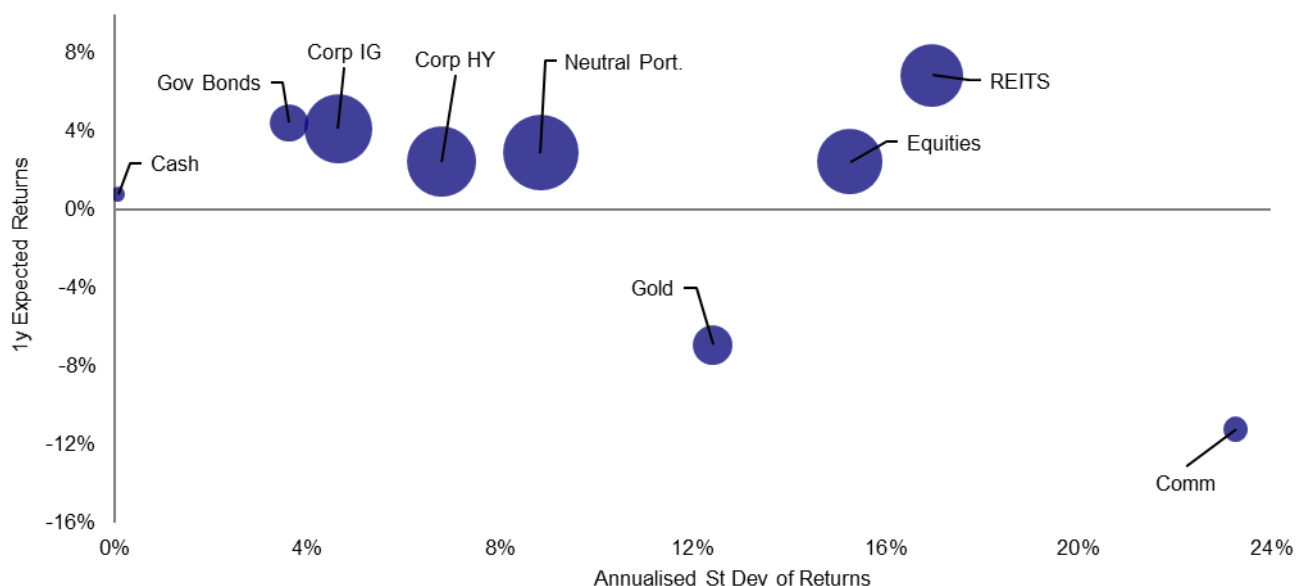
#### In our view:

- Government debt outlook is improved by the sharp rise in yields. We increase to Overweight.
- Real estate (REITS) offers the best returns. We increase to Overweight.
- Equities are handicapped by the growing threat of recession. We reduce to Underweight.
- Corporate investment-grade (IG) spreads may widen further. We reduce but stay Overweight.
- Corporate high-yield (HY) may suffer wider spreads and higher defaults. We reduce to zero.
- Cash rates are now overshadowed by government bond yields. We reduce but stay Overweight.
- Commodities have risen sharply and may consolidate lower. We remain at zero.
- Gold contains a geopolitical risk-premium and appears expensive. We remain at zero.
- Regionally, we favour the UK and EM.

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

- UK government bonds
- EM 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 13 June 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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We go Overweight government bonds for the first time since 2016

**Summary and conclusions: hard to resist higher government bond yields**

Major central banks are tightening aggressively, bond yields are up sharply and most asset prices are down. With US treasury yields at levels not seen in more than a decade, and our belief that global recession risks are growing, we choose to go Overweight government bonds within our Model Asset allocation (for the first time since 2016). We balance this by also going Overweight real estate. These changes are achieved by reducing equities (to Underweight), investment-grade credit (still Overweight), high-yield credit (to zero) and cash (still Overweight). Across regions, we favour UK and emerging market (EM) assets.

Yields are up a lot and recession risks are growing

Having been too expansive for too long (in our opinion), major central banks have started to tighten aggressively, with obvious exceptions in China and Japan. Sharp policy rate hikes and the switch from quantitative easing (QE) to quantitative tightening (QT) have driven bond yields much higher (see **Figure 5**). Though recession is not our central scenario, we think this rapid change in financial conditions increases the likelihood, especially given the slowdown that was already in motion. Not surprisingly, with yields rising to levels not seen for some time, and recession risks on the rise, we find it hard to resist the government bond asset class that we had previously shunned.

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 will remain above many central bank targets
- The Fed raises rates more than other central banks (the PBOC loosens)
- Long-term government bond yields peak and yield curves flatten
- Credit spreads widen and defaults rise
- USD weakens slightly as geopolitical risk premia decline; CNY weakens
- Equity dividend growth moderates and equity yields rise slightly
- Real estate (REIT) dividend growth moderates and yields are flat/slightly up
- Commodities struggle as the global economy slows (except agricultural products)

We expect the Fed's aggressiveness to wane towards year-end

The full set of assumptions are shown in **Appendix 4**, while the resultant market targets are shown in **Figure 35** and projected returns for global assets are shown in **Figure 2**. We have had to accept that the US Federal Reserve (Fed) will continue to be very aggressive over the coming months but believe that a slowing economy and falling inflation will reduce the pace of tightening towards year-end. Other central banks are expected to be less aggressive, especially the ECB and the Bank of England (BOE), with Europe more likely to see recession than the US. Importantly, though we believe bond yields may need to go higher in the long-term, we suspect that long-yields will shortly peak for this cycle and expect flattening (and perhaps inversion) of yield curves.

Unusually, we don't think risk taking will be rewarded over the next year

Interestingly, and unusually for us, 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). The obvious exception is real estate (REITs), where reasonable yields offer some income and where we expect moderate growth in rentals and dividends. We think that equities, on the other hand, will suffer a more dramatic slowdown in dividends and yields are lower. We expect yields on both real estate and equities to be flat to slightly up, 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 and commodities, including gold (see **Figure 37**).

Learning to love government bonds

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). The biggest change is that we are adopting an Overweight stance in **government bonds** for the first time since September 2016. We raise the allocation to 30% versus a Neutral 25% and versus the previous 10% (the minimum that we allow). We still favour the EM region within government bonds (not China) and are now also Overweight the Eurozone, UK and US.

Higher yields elsewhere and the growing risk of recession lead to a reduced allocation to equities	The rise in government bond yields has caused a widening of the yield gap versus equity dividend yields in many regions (in the US that gap is the widest since April 2010 – see <b>Figure 28</b> ). That, and our concern about the risk of recession, pushes us to partly facilitate the rise in the government bond weighting by reducing the allocation to <b>equities</b> (from the previously Overweight 50% to a slightly Underweight 40%). This is a rapid turnaround after going Overweight in March but circumstances have changed a lot since then. <b>Figure 3</b> shows that we reduce the equity allocations in Europe (including the UK) and Japan, while boosting that of China (where we find the valuations to be appealing and expect economic acceleration in the second half – see <a href="#">Why I like Chinese equities</a> ). We are now Underweight not only US equities but also those of Europe ex-UK, while being Overweight elsewhere (especially EM).
HY eliminated	That dampening of riskiness in the Model Asset Allocation is deepened by the elimination of <b>high-yield credit (HY)</b> , which was previously at an Underweight 2%. Though yields and spreads to government yields have risen (as implied in <b>Figure 5</b> ), we fear a further rise in spreads and more defaults as economies slow (see <b>Appendix 4</b> ).
Real estate boosted	Offsetting some of the de-risking are reductions in the allocations to IG and cash, along with the rise in real estate. Starting with the latter, our projected returns suggest <b>real estate</b> will be the most remunerative asset over the next 12 months and we boost the allocation to an Overweight 10% (from the Neutral 8%). In particular, we like EM REITs due to the yield of 5.9%. We boost allocations in the UK and the US, while reducing that in Europe ex-UK (where the elevated threat of recession doesn't help).
Cash now less attractive given the rise in bond yields	<b>Cash</b> maintains many of its diversifying qualities (low volatility and low correlation to other assets) and interest rates are rising. However, our projections suggest better returns on government bonds, which we think now offer compensation for the higher volatility (see <b>Figure 1</b> ). We have therefore reduced the cash allocation to 5%, which is still above Neutral (2.5%) but less than the previous 10% that has served us well. On the other hand, we think <b>gold</b> is expensive and remain zero-weighted..
IG still favoured but less so	Our projections suggest returns on IG will be just less than on government bonds but with more volatility. Hence, we have also reduced the IG allocation to permit the swing to government bonds. The <b>IG</b> allocation is reduced from the Maximum 20% to a still Overweight 15%, with reductions in US, Japanese and Chinese positions.
Commodities too expensive	We eliminated <b>commodities</b> too early and have missed this year's rally. However, we doubt that prices can go much higher and stick to a zero allocation.
UK & EM favoured	From a regional perspective, we continue to prefer the assets of the UK and EM. We find the assets of both are relatively cheap, while benefitting from high commodity prices.
Three scenarios for the war in Ukraine	Finally, our projections assume the war in Ukraine continues at its current intensity but we also consider two alternative scenarios: quick resolution and an energy crisis.

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

	Expected 1-year Total Return	Neutral Portfolio	Policy Range	Model Asset Allocation	Model Position Vs Neutral
<b>Cash &amp; Gold</b>	-3.1%	5%	0-10%	↓	5% Neutral
Cash	0.8%	2.5%	0-10%	↓	5% Overweight
Gold	-6.9%	2.5%	0-10%	↓	0% Underweight
<b>Government Bonds</b>	4.4%	25%	10-40%	↑	30% Overweight
<b>Corporate IG</b>	4.1%	10%	0-20%	↓	15% Overweight
<b>Corporate HY</b>	2.5%	5%	0-10%	↓	0% Underweight
<b>Equities</b>	2.4%	45%	25-65%	↓	40% Underweight
<b>Real Estate (REITS)</b>	6.9%	8%	0-16%	↑	10% Overweight
<b>Commodities</b>	-11.2%	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 (19/06/2022)**

	Neutral	Policy Range		Allocation	Position vs Neutral
<b>Cash Equivalents</b>	<b>5%</b>	<b>0-10%</b>		<b>5%</b>	
Cash	2.5%		↓	5%	
Gold	2.5%			0%	
<b>Bonds</b>	<b>40%</b>	<b>10-70%</b>	↑	<b>45%</b>	
Government	25%	10-40%	↑	30%	
US	8%		↑	10%	
Europe ex-UK (Eurozone)	7%		↑	9%	
UK	1%		↑	2%	
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%	
<b>Equities</b>	<b>45%</b>	<b>25-65%</b>	↓	<b>40%</b>	
US	25%			16%	
Europe ex-UK	7%		↓	4%	
UK	4%		↓	5%	
Japan	4%		↓	5%	
Emerging Markets	5%			10%	
China**	2%		↑	4%	
<b>Real Estate</b>	<b>8%</b>	<b>0-16%</b>	↑	<b>10%</b>	
US	2%		↑	2%	
Europe ex-UK	2%		↓	0%	
UK	1%		↑	2%	
Japan	2%			2%	
Emerging Markets	1%			4%	
<b>Commodities</b>	<b>2%</b>	<b>0-4%</b>		<b>0%</b>	
Energy	1%			0%	
Industrial Metals	0.3%			0%	
Precious Metals	0.3%			0%	
Agriculture	0.3%			0%	
<b>Total</b>	<b>100%</b>			<b>100%</b>	
<b>Currency Exposure (including effect of hedging)</b>					
USD	48%		↑	38%	
EUR	20%		↓	18%	
GBP	7%		↑	12%	
JPY	15%			13%	
EM	9%			20%	
<b>Total</b>	<b>100%</b>			<b>100%</b>	

\*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

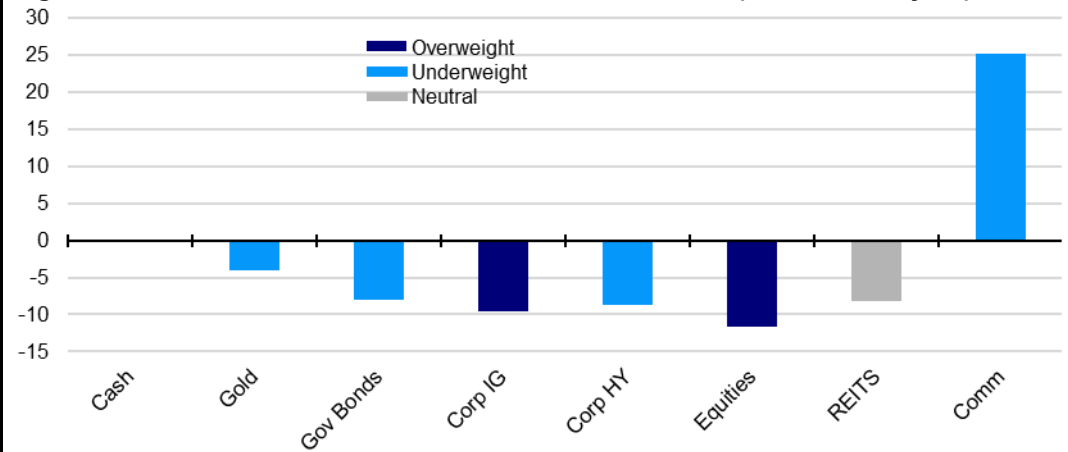
Only commodities have delivered positive returns

**Since we last wrote**

In the last Big Picture document we took advantage of the previous sell-off in equities to move from Neutral to Overweight, though this was balanced by reducing real estate (REITs) to Neutral and adding to investment grade (IG) credit (see [Global Asset Allocation 2022 Q2](#) published on 20 March 2022). From a regional perspective we favoured UK and EM assets. **Figure 4** shows how global assets have performed since then (as of 13 June 2022). Full regional detail is shown in **Appendix 2**.

Most assets have again delivered negative returns in both local currency and USD, with the notable exception of commodities (or more precisely energy and agricultural products). That was unfortunate for us, given that we were zero-weighted in commodities (having been maximum allocated during earlier stages of the commodity rebound). More importantly, we were maximum allocated to cash which outperformed all global asset groups except energy and agriculture. From a regional perspective, our preference for EM assets brought largely neutral results and our UK preference was rewarded (since it was focused on equities).

**Figure 4 – Global asset class total returns since 28/02/22 (local currency, %) \***

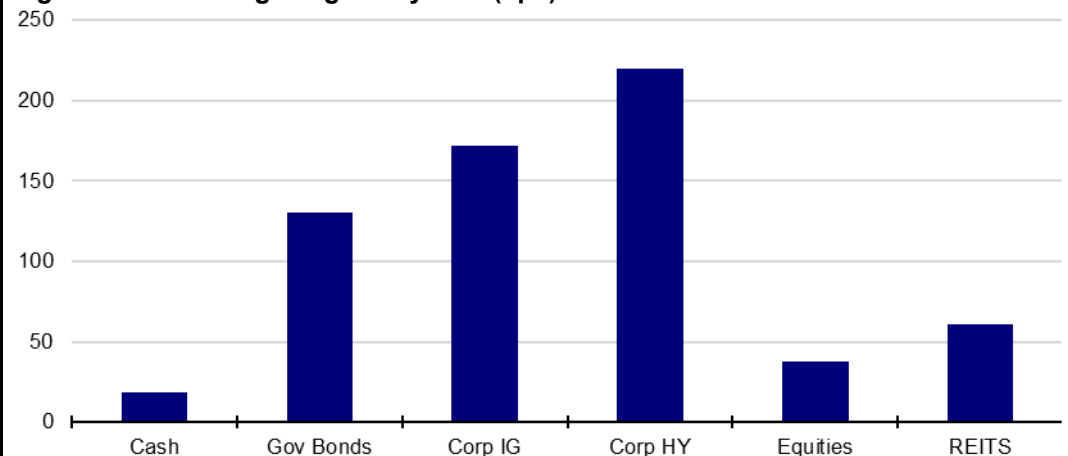


\*28/02/22 to 13/06/22. Colours represent model allocations during this period. See appendices for definitions and disclaimers. **Past performance is no guarantee of future results.** Source: Refinitiv Datastream, Invesco

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 rebalancing towards bonds. We think so, of which more later.

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



From 28/02/22 to 13/06/22. 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
<b>Cash &amp; Gold</b>	2.4	0.6	1.7	0.7
Cash - US Treasury Short	1.5	-0.2	0.8	-0.2
Gold	3.2	1.5	2.6	1.5
<b>Government Bonds</b>	2.7	0.9	2.0	1.0
<b>Corporate IG</b>	3.1	1.4	2.4	1.4
<b>Corporate HY - US HY</b>	4.5	2.8	3.9	2.8
<b>Equities</b>	6.7	4.9	6.0	4.9
<b>Real Estate (REITS)</b>	6.3	4.6	5.6	4.6
<b>Commodities</b>	6.2	4.5	5.6	4.5

Note: Estimates as of 31 March 2022 and based on the 10-year capital market assumptions published by Invesco Investment Solutions in Long-Term Capital Market Assumptions (May 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, equities & gold dominate most 10-year CMA based optimal portfolios

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 are maximised in all but one case, IG and cash are mainly zero allocated, while equities and gold are mainly Overweighted. The messages are not clear for government bonds, HY or real estate (REITs). 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
<b>Cash &amp; Gold</b>	5%	0-10%	10%	9%	10%	10%	3%	10%	0%	10%
Cash	2.5%	0-10%	10%	0%	4%	0%	0%	0%	0%	0%
Gold	2.5%	0-10%	0%	9%	6%	10%	3%	10%	0%	10%
<b>Government Bonds</b>	25%	10-40%	40%	24%	39%	28%	20%	19%	10%	22%
<b>Corporate IG</b>	10%	0-20%	13%	0%	0%	0%	0%	0%	0%	0%
<b>Corporate HY</b>	5%	0-10%	10%	10%	8%	0%	10%	10%	5%	0%
<b>Equities</b>	45%	25-65%	25%	53%	40%	48%	57%	57%	65%	52%
<b>Real Estate (REITS)</b>	8%	0-16%	0%	0%	0%	10%	5%	0%	16%	12%
<b>Commodities</b>	2%	0-4%	2%	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 (May 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

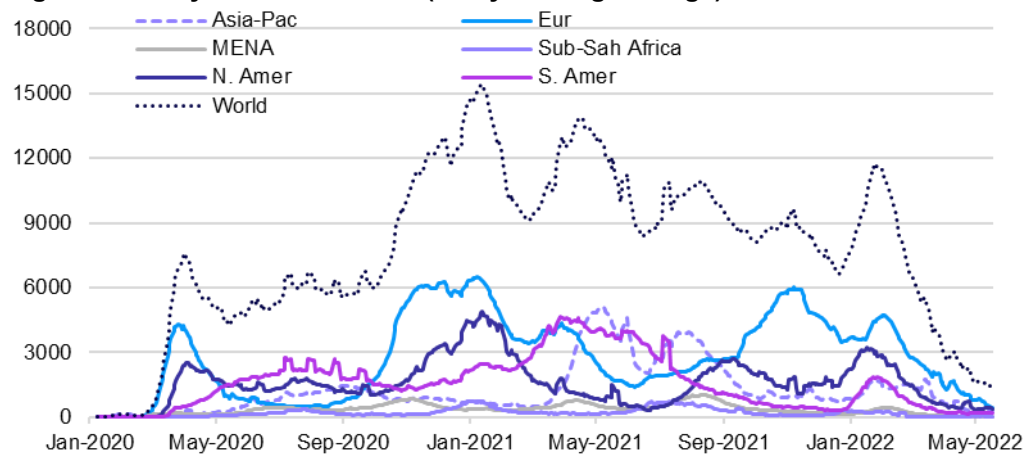


Covid is ceasing to be a factor...

### Can central banks control inflation without provoking recession?

Judging by the data shown in **Figure 8**, Covid-19 is now as much under control as it has been since the initial outbreak. The decline in deaths attributed to Covid appears to be due to lower infection rates (though less testing is being done), broader vaccine coverage and more effective treatments for those who are hospitalised. Importantly, the global case fatality rate is now around 1/10<sup>th</sup> of what it was in early 2020 (0.2%-0.3% versus 2.0%-3.0%).

**Figure 8 – Daily Covid-19 deaths (7-day moving average)**



Based on daily data from 23 January 2020 to 2 June 2022  
Source: Reuters and Invesco

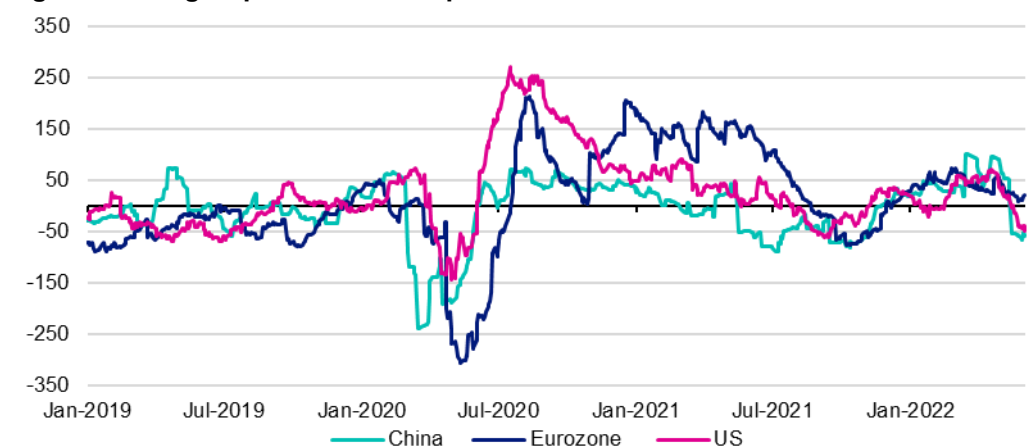
...except in China

One exception would appear to be China, though the problem is more the actions taken to prevent a serious outbreak, rather than elevated infections or deaths. The lockdown in Shanghai has been particularly damaging to China's economy and we reckon that areas under lockdown have recently been accounting for 30%-40% of GDP. Shanghai's lockdowns started in March and the sudden deterioration in activity is seen in the switch to negative economic data surprises shown in **Figure 9**.

US data has also been surprisingly weak

Interestingly, and despite Europe's greater vulnerability to the effects of the war in Ukraine, economic surprises in the Eurozone have so far remained positive (perhaps because the expectations were so low). There has, however, been a notable loss of momentum. Even more shocking is the recent deterioration in US economic data relative to consensus expectations, with recent disappointments in new home sales, durable goods orders, auto sales and ADP payrolls. This could reflect the squeeze in real personal disposable income that we highlighted last time but could also be a sign that Fed interest rate hikes are starting to have an effect.

**Figure 9 – Citigroup Economic Surprise Indices**

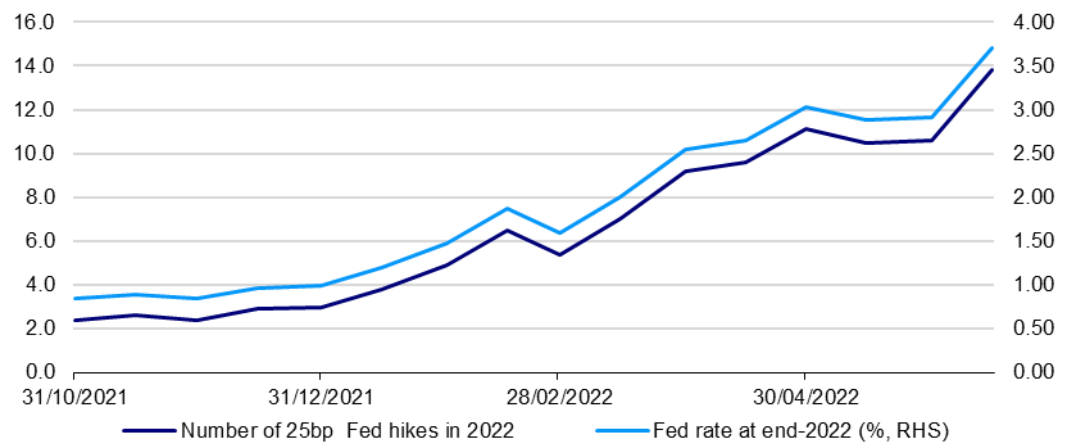


Note: based on daily data from 1 January 2019 to 2 June 2022.  
Source: Citigroup, Refinitiv Datastream and Invesco

The Fed is tightening rapidly...

When it comes Fed policy, the US central bank started its quantitative tightening (QT) programme at the start of June, with reductions in holdings of bonds of \$47.5bn per month until September when they will double to \$95bn per month (roughly twice the maximum rate of reduction seen during the 2017-2019 QT exercise). The Fed's Open Market Committee (FOMC) raised its policy rate by 75bps at its June meeting (after a surprisingly high May CPI reading) and suggested that a similar hike may be warranted at the 27 July meeting, which would take the upper end of the Fed Funds target range to 2.50% (from the 0.25% that prevailed until the first rate hike on 16 March). The extent of the Fed's policy about turn since last year is shown in **Figure 10**, which shows market anticipations as expressed in the Fed Funds futures market.

**Figure 10 – Fed policy outlook as implied by Fed Funds futures**

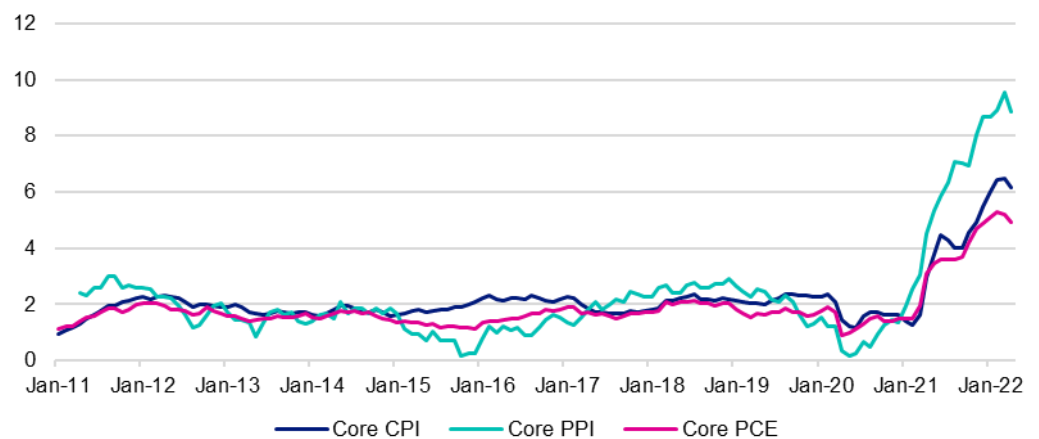


Note: based on fortnightly data from 31 October 2021 to 15 June 2022. "Fed rate" is the upper end of the Fed Funds policy range. Calculations provided by Bloomberg. Source: Bloomberg and Invesco

...but will it take a break if inflation eases?

However, members of the FOMC seem to be divided about what should happen after the summer, with some (notably Raphael Bostic) suggesting it would be appropriate to pause the rate hikes for at least one meeting to better judge the impact of what has been done so far. However, he would appear to be in the minority. **Figure 10** suggests that market participants anticipate the upper end of the Fed Funds target range being close to 3.7% at the end of 2022 (implying another 120 basis points of hikes across the September, November and December meetings). Having previously expected the Fed to take a break at the September meeting, we now feel they will continue hiking. However, **Figure 11** shows that all commonly used measures of US core inflation have declined of late and we expect a sizeable decline in headline inflation (eventually) if commodity prices stabilise, which we expect (see [The causes and course of inflation](#)).

**Figure 11 – Measures of core inflation in the US (% yoy)**

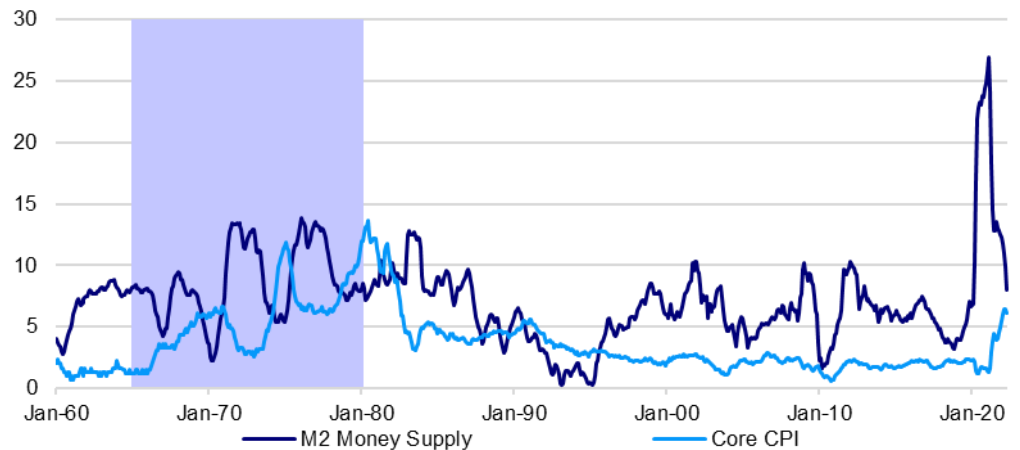


Notes: monthly data from January 2011 to April 2022. "Core" measures of inflation exclude food and energy items. "CPI" is consumer price index. "PPI" is producer price index. "PCE" is personal consumption expenditures, the core version of which is favoured by the Fed. Source: Refinitiv Datastream and Invesco

Monetary deceleration suggests inflation will ease

Indeed, whether we look at the underlying causes of inflation or more proximate causes, we see reasons for believing that inflation will ease. First, if inflation is a monetary phenomenon, the inflation that we are now experiencing finds its roots in the large monetary expansion that was the result of government and central bank reactions to the pandemic. Nowhere was this truer than the US, where M2 growth reached 27%-28% in the year to early 2021 (see **Figure 12**) and this was followed by a surge in inflation. However, US M2 growth was only 8% in the year to April 2022 (and falling), which suggests the inflationary impulse is weakening. This is also true on a global scale, so we expect to see inflation peaking in many countries over the coming months.

**Figure 12 – US money supply growth and core inflation (%)**



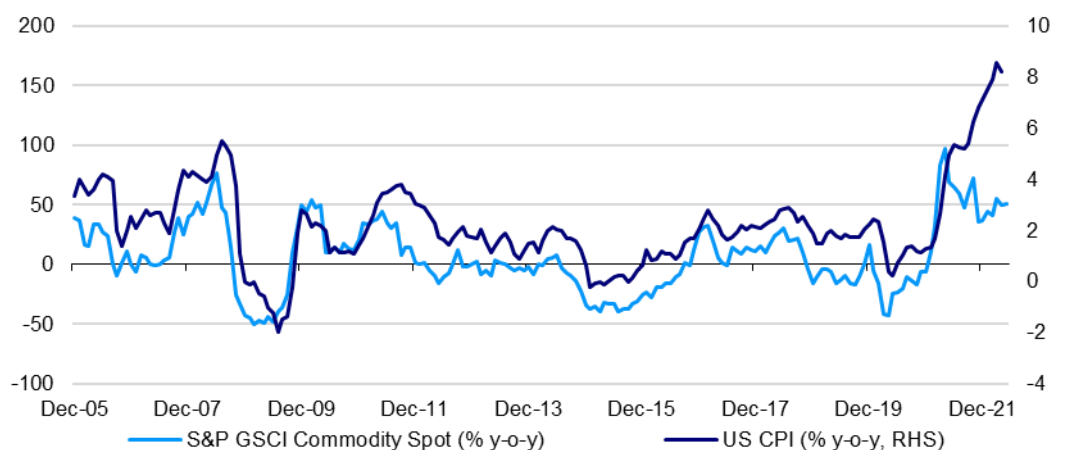
Based on monthly data from January 1960 to April 2022. The shaded area is from January 1965 to January 1980. Source: Refinitiv Datastream and Invesco

More proximately (and used as an alibi by governments and central banks) was the sharp rebound in commodity prices which started with the recovery from the Covid recession. Russia's invasion of Ukraine led to a further uptick in commodities but, with the exception of agricultural products, most of the damage had already been done.

Flattening commodity prices should bring down headline inflation rates

**Figure 13** shows a clear correlation between commodity price inflation and US headline consumer price inflation (not surprising given that some components of CPI are commodities). However, what is also noticeable is that commodity price inflation has eased (despite the invasion of Ukraine), which suggests the inflation impetus from that source is easing. Indeed, if commodity prices stabilise, their rate of change will fall to zero, meaning that headline inflation should fall below core inflation over the next 12 months. Then the question remains about what happens to core inflation.

**Figure 13 – Commodity prices and US CPI inflation**

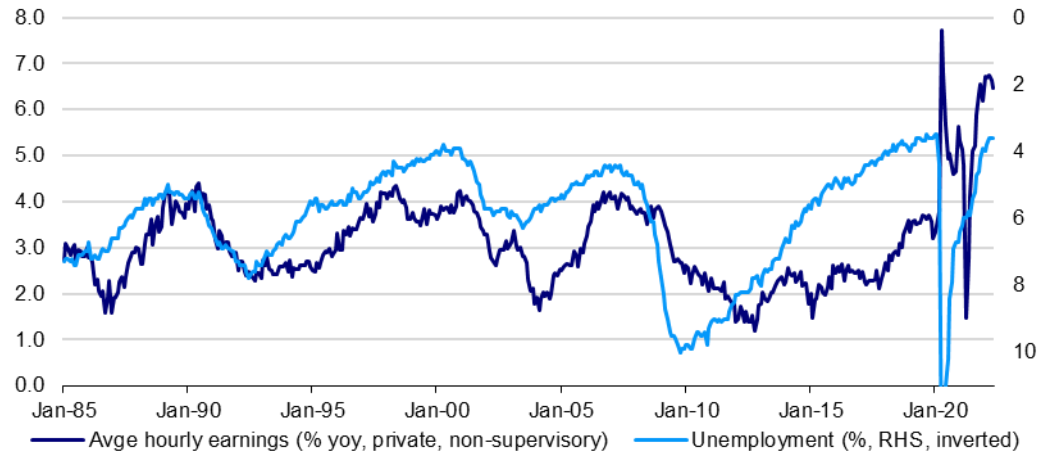


Note: **Past performance is no guarantee of future results.** Based on monthly data from January 2006 to May 2022 (as of 31 May 2022). Source: Refinitiv Datastream and Invesco

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

Assuming that core inflation is in some way linked to the growth of unit labour costs, then the growth in wages is likely to be key. Countries with tight labour markets, such as the US and the UK, have experienced an increase in wage growth, as predicted by the Phillips Curve. **Figure 14** shows the case of the US where, after some volatility during the pandemic, unemployment has fallen to historically low rates and wage growth has picked up. However, there is a sign in that chart that wage growth may be easing and this is confirmed when we look at monthly gains over the last four months, which are suggestive of an annualised gain in the 3%-4% region, rather than the recent 6%-7% yoy gains. These are tentative signs that the worst of the wage inflation may be behind us, something which should eventually be a comfort to the Fed.

**Figure 14 – US unemployment and wage growth**

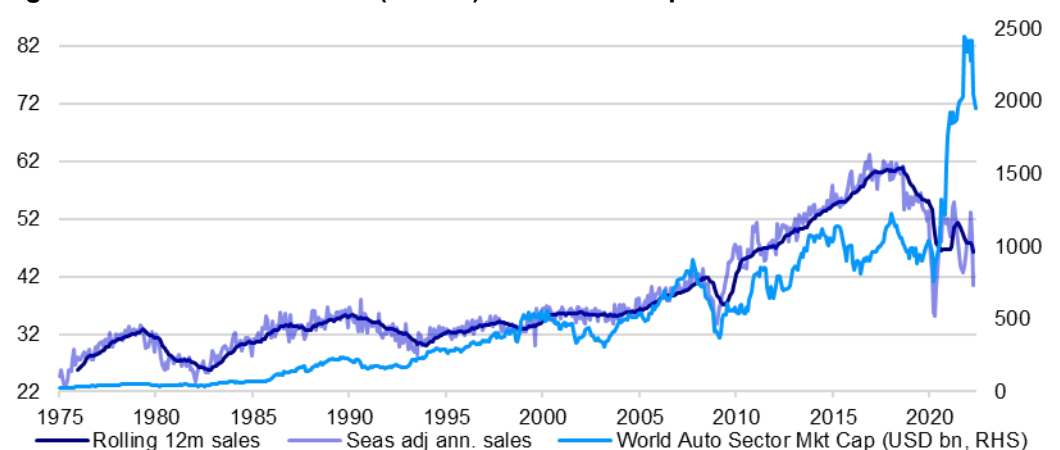


Notes: based on monthly data from January 1985 to May 2022.  
Source: Refinitiv Datastream and Invesco

High inflation is reducing real spending power, which should eventually pave the way for lower inflation

Nevertheless, inflation is eating into consumer spending power, with real personal disposable income falling in many countries. This has translated into weak consumer spending in the UK, for example, and **Figure 15** shows that global auto sales are still trending lower, a process started before the pandemic. It is hard to disentangle the effect of weak demand versus supply constraints, though in recent weeks some German auto manufacturers announced they were back at full capacity. Hence, recent sales weakness may reflect weak demand as households prioritise spending on essentials.

**Figure 15 – Global auto sales (million) and market capitalisation of auto stocks**



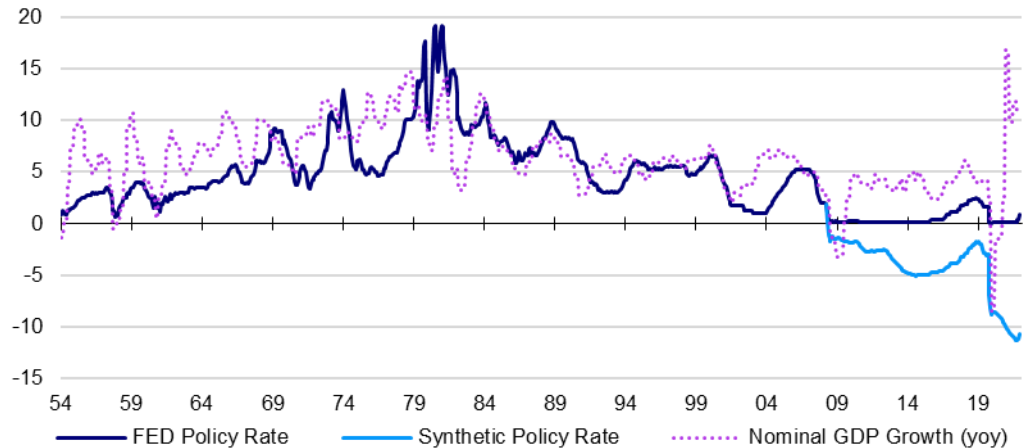
Notes: **Past performance is no guarantee of future results.** Monthly data from January 1975 to May 2022 (as of 31 May 2022). Sales are annualised and based on an aggregation of country sales data (Australia, Austria, Belgium, Brazil, Bulgaria, China, Cyprus, Czech Republic, Denmark, Estonia, Finland, 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



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

Just at the moment we see weakening economies, major developed world central banks are starting to remove the generous support provided since the outbreak of Covid. **Figure 16** shows just how loose the Fed has been over the last two years (despite strong economic recovery), 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 have a lot of work to do.

**Figure 16 – The Fed has only just begun**



Notes: Monthly data from June 1954 to May 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

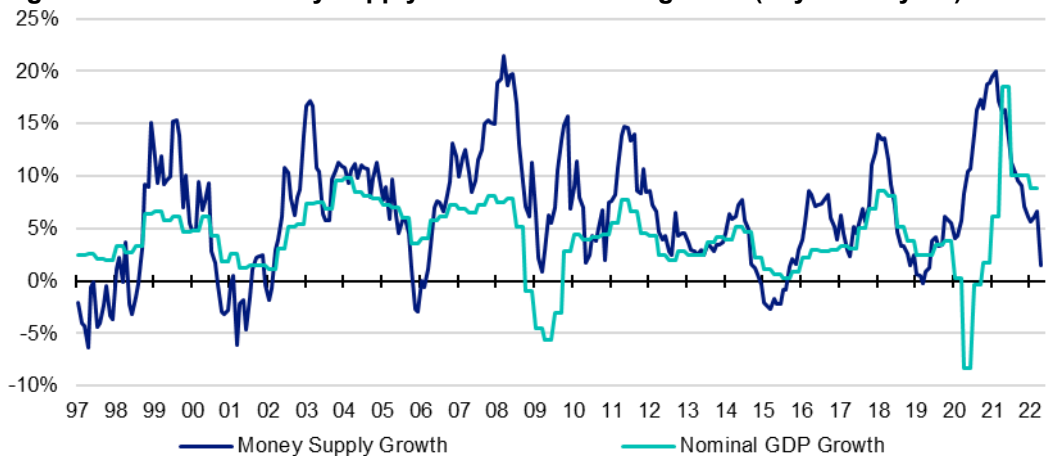
The Fed and other central banks are trying to close that policy gap...

Of course, that gap can be closed in two ways: by Fed tightening or by a reduction in nominal GDP growth (or some combination of the two). The easing of inflation that we envisage will lead to lower nominal GDP growth and the Fed seems set to continue tightening aggressively, with further big rate hikes and a reduction in the balance sheet. Further, if real growth slows (as we expect), nominal GDP growth will slip even further.

...raising the risk of recession

But this still leaves the question as to whether the Fed and other central banks can bring inflation to a level that satisfies them, without overtightening and pushing their economies into recession. **Figure 17** shows that after a period of excess monetary growth during and after the early stages of the pandemic, global money supply growth is no longer sufficient to support the current level of nominal GDP growth. This suggests we need to be vigilant about the risk of recession.

**Figure 17 – Global money supply and nominal GDP growth (% year-on-year)**



Notes: Monthly data from January 1997 to April 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. Source: Datastream and Invesco

An atypical cycle slows

Russia and China in recession, Eurozone likely to follow

Markets appear to be in a stagflation mood

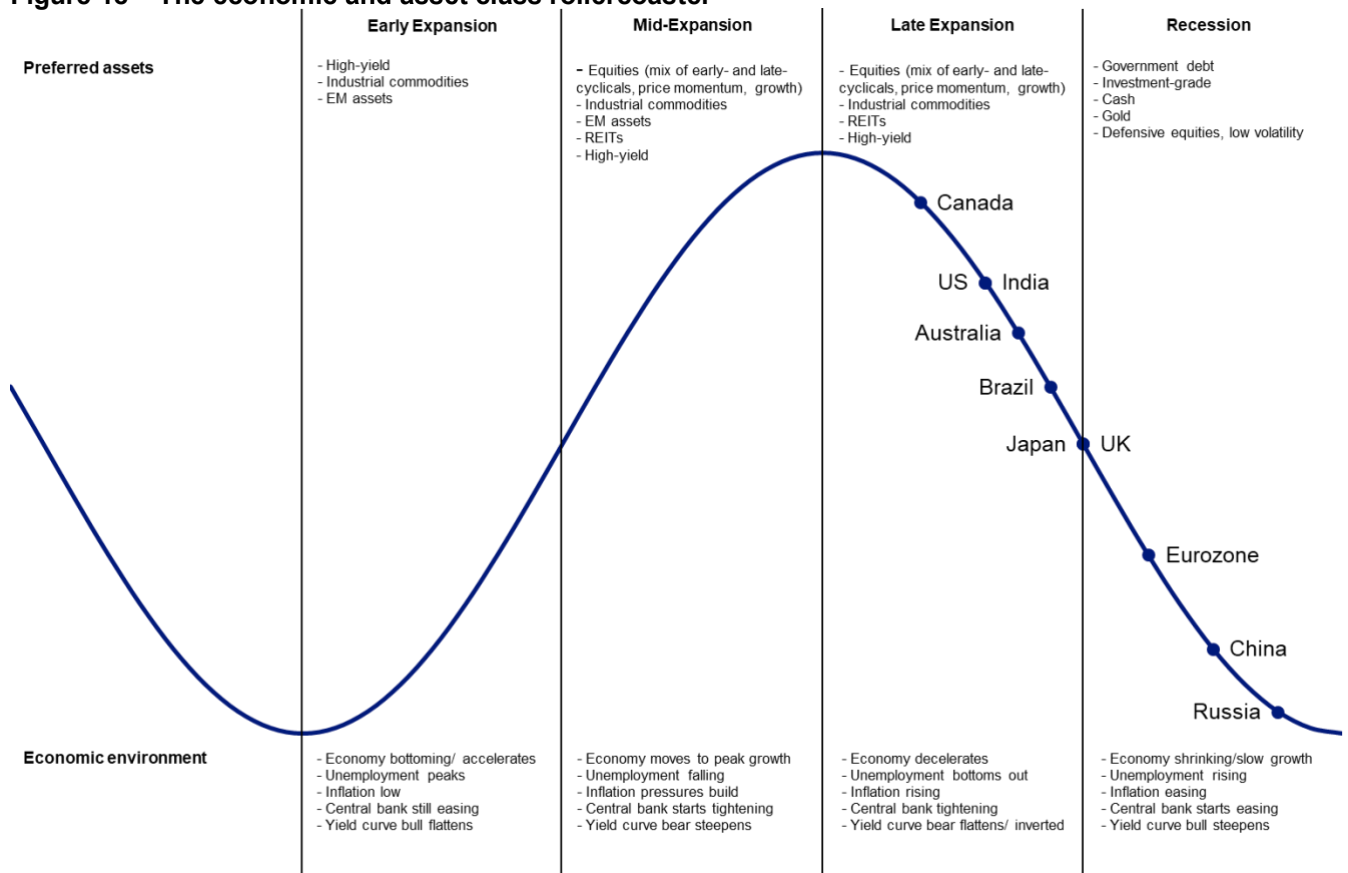
**From economic to market cycles**

We still believe the global economy is in a decelerating phase, with less growth than last year and less than we had anticipated. **Figure 18** shows our assessment of where major economies are within their economic cycles. The preferred assets are what our research suggests have outperformed at each stage of a “typical” cycle. However, this cycle has been far from typical, with deep recession provoking massive policy support that led to a sharp economic rebound and a surge in inflation, which is now causing central banks to aggressively remove support, thus provoking financial market volatility.

That we place Russia in the recession phase is unlikely to surprise. That we also place China there is less obvious but our reckoning is that growth is below trend, with retail sales and industrial production both down in the year to April 2022 (though improving in May). Eurozone data does not yet suggest the region is in recession but we believe it is the most likely candidate among developed economies given the trading links with Russia (especially energy). We suspect it is just a matter of time, which may frustrate the ECB’s desire to aggressively tighten policy. Elsewhere, we view major economies as being in the slowdown phase, with Japan and the UK bordering on recession.

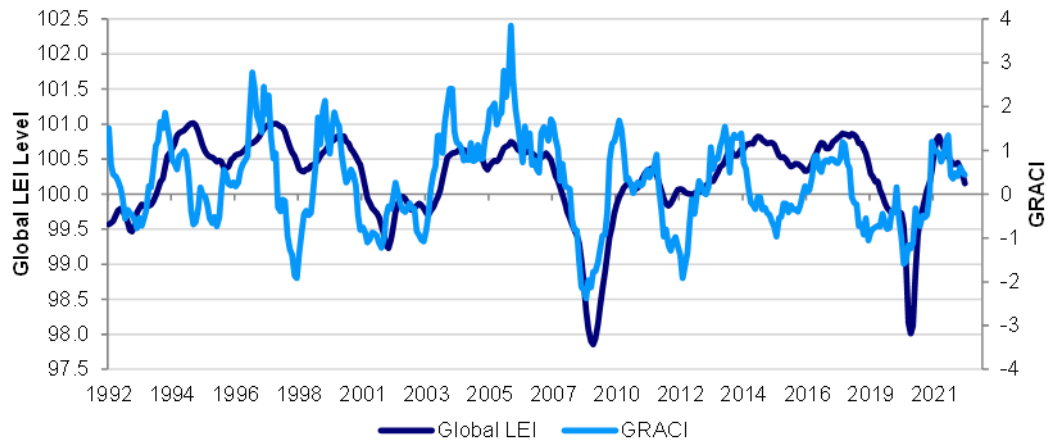
Thinking about where that leaves the global economy, our best guess is that it is somewhere between the late expansion and recession phases. That may sound dangerous from an investment perspective but in some ways that is how cyclical assets have been behaving, with equities and industrial metals falling. However, what we would normally consider to be defensive assets (government bonds and IG, for example) have also been suffering, because bond yields have been rising on higher inflation and central bank tightening. Markets appear to be in a stagflation frame of mind. Given that we think inflation will ease over the rest of 2022, we suspect central banks will tighten less than feared, which may help some assets find their feet.

**Figure 18 – The economic and asset class rollercoaster**



Notes: Chart shows a schematic portrayal of the global economic cycle and our view of the cyclical positioning of the world’s largest economies. The selection of preferred assets is based on our research published in “Asset allocation in pictures” in November 2017. See appendices for definitions, methodology and disclaimers. Source: Invesco Global Market Strategy Office

**Figure 19 – Global risk appetite and the global business cycle**



Note: monthly data from January 1992 to May 2022. Both Global LEI (Leading Economic Indicator) and GRACI (Global Risk Appetite Cycle Indicator) are 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 is a measure of relative risk-adjusted performance between riskier and safer asset classes (it measures how much investors have been rewarded, on average, for taking an incremental unit of risk in global financial markets on a trailing medium-term basis). A rising index signals improving market sentiment and vice-versa. **Past performance does not guarantee future results.** Source: Federal Reserve, Barclays, BEA, Bloomberg L.P., Citigroup, JP Morgan, Macrobond, Moody's and Invesco Investment Solutions

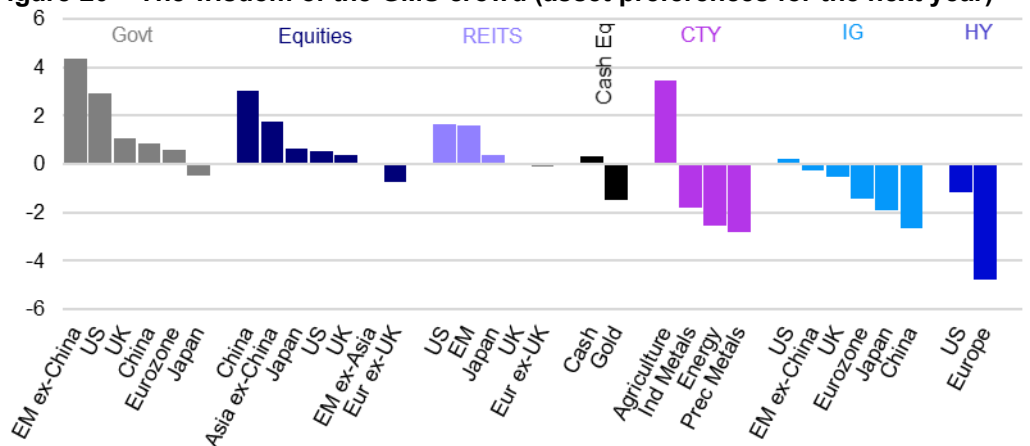
Risk appetite continues to wane

The leading indicator measure summarised in **Figure 19** confirms that global growth is edging down from high post-pandemic levels towards historical norms (as provided by Invesco Investment Solutions). The chart also shows that risk appetite (GRACI) has abated, as suggested by the declines in most assets. The question is whether risk appetite will retreat even further or whether we can now expect stabilisation?

Invesco's GMS team now favours government debt

The views of Invesco's Global Market Strategy Office (GMS) suggest something of a barbell approach, with government debt, equities and real estate the preferred assets, while credit is among the least preferred groups, along with commodities (see **Figure 20**, which shows the outcome of a regular survey in which GMS team members express their views about relative performance over the next 12 months).

**Figure 20 – The wisdom of the GMS crowd (asset preferences for the next year)**

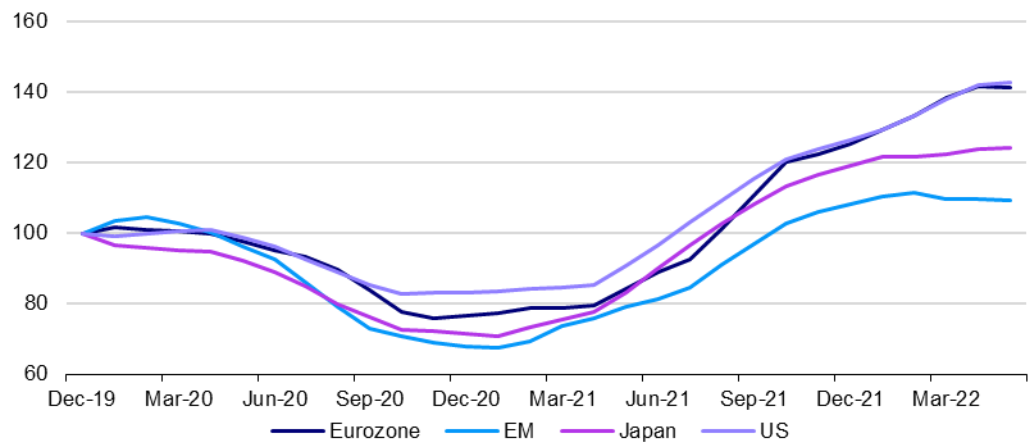


The chart shows the opinions of Invesco's Global Market Strategy Office (GMS -- see back cover page for membership) about asset returns over the next 12 months in USD. Each member of the team was asked to give a score from -10 to +10 for each asset (-10 being large underperformance and +10 being large outperformance versus the average of all assets). Those scores are then averaged across members of the team and organised by asset category according to the average score across regions and then ranked within each category. Abbreviations: Cash Eq. is cash equivalents; CTY is commodities; Asia ex-China includes only emerging markets; Ind. Metals is industrial metals; Prec. Metals is precious metals. There is no guarantee that these views will come to pass. Source: Invesco Global Market Strategy Office

Profits are flattening

Since the bottom of the pandemic recession, global equity markets have been supported by the recovery in earnings per share (EPS, see **Figure 21**). However, there has been a notable flattening of profits in EM and Japan, with tentative signs of a slowdown also emerging in the US and the Eurozone.

**Figure 21 – Earnings per share trends (3MMA, December 2019 = 100)**



Notes: monthly data from December 2019 to May 2022. The chart shows rolling three month averages of earnings per share, rebased to 100 in December 2019. Based on Datastream country/regional indices, with EPS calculated as the quotient of the price index and price-earnings ratios.  
Source: Refinitiv Datastream and Invesco

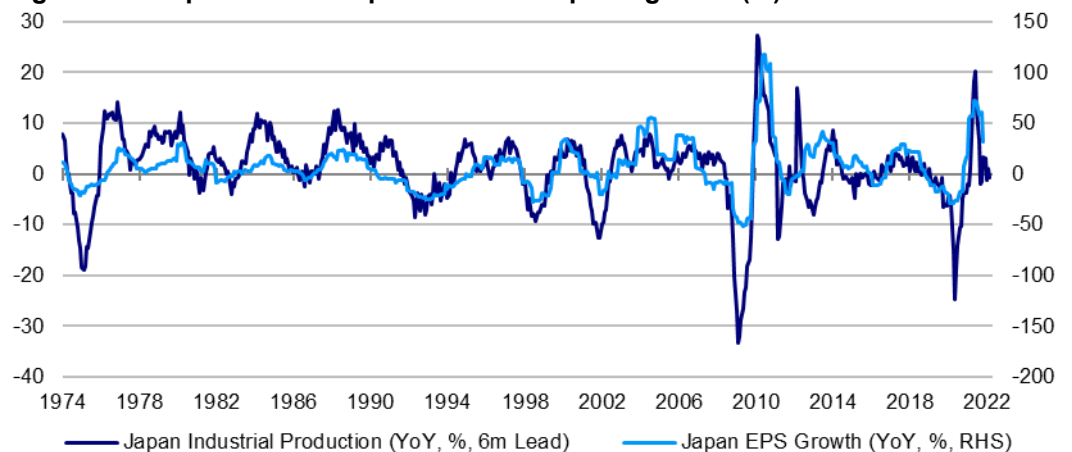
Less growth and higher costs are taking a toll

Such a slowdown in profit growth is the natural consequence of economic deceleration (see **Figure 22** for the example of Japan). The rise in commodity prices (and wages in the US and UK) may also be imparting an additional brake on profits as margins get squeezed. In fact, it is impressive that profits have been so resilient in the face of this pincer movement from growth and costs.

Hence, we are now more cautious on dividend growth

**Figure 22** suggests that we need to get used to lower (and perhaps negative) profit growth. Chinese industrial profits were down 8.5% yoy in April, though our measure of full market profits shows that there is still growth in the broader market. As we have already stated, we expect the Eurozone to suffer more than most from the sanctions imposed upon Russia and Japan's industrial production has been weak of late. Obvious areas of relatively good news have been the US, where industrial production has been stronger than in Europe (though we see weakness ahead) and those EM markets that are resource producers. Nevertheless, our dividend growth assumptions are now broadly more conservative (see **Appendix 4**).

**Figure 22 – Japan industrial production and profit growth (%)**



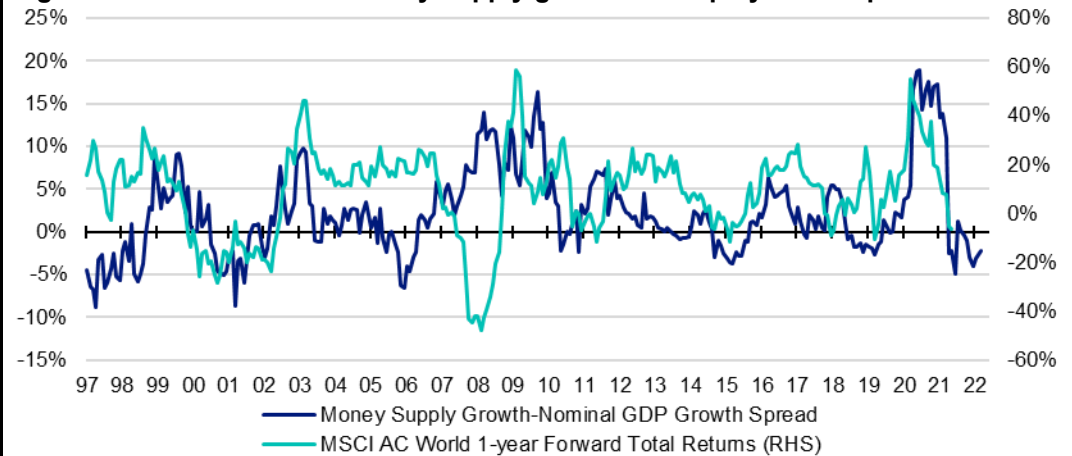
Notes: monthly data from January 1974 to May 2022. EPS is earnings per share and is calculated as the quotient of the Datastream Japan price index and the respective price-earnings ratio.  
Source: Refinitiv Datastream and Invesco



Tightening monetary conditions also point to a poor outlook for equities

Overall, we think it inevitable that the change in monetary conditions is changing the outlook for financial assets. **Figure 23** 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. On this basis, the outlook for global equities is not great.

**Figure 23 – Global excess money supply growth and equity market performance**

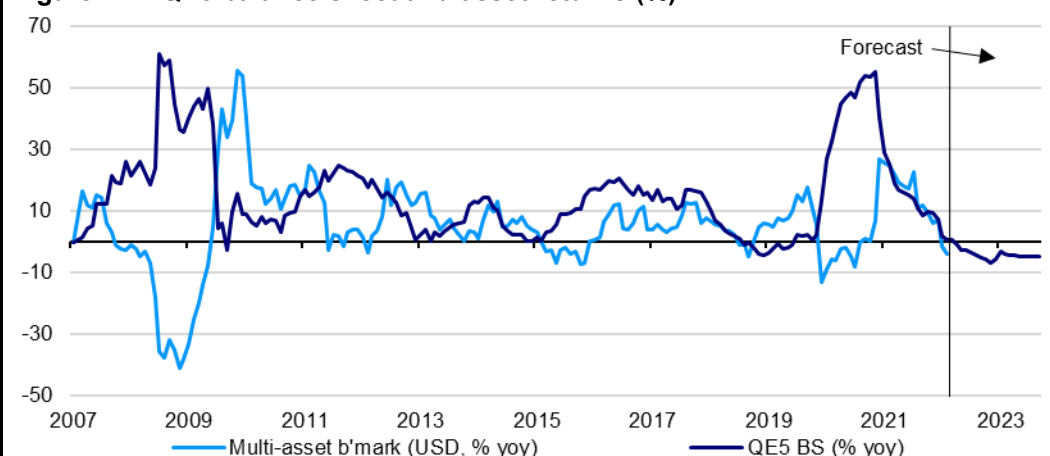


Notes: **Past performance is no guarantee of future results.** Monthly data from January 1997 to May 2022. We aggregate money supply and nominal GDP in US dollars for the US, Eurozone, China, Japan and the UK using Thomson Reuters International Comparable Economic indicators. Our money supply indicator 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 May 2022. Source: Datastream and Invesco

And quantitative tightening could depress asset returns

**Figure 24** 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 **Figures 3** and **37**). If there is a correlation between balance sheet expansion and asset returns, and based on our view of how balance sheets will develop to end-2023, we conclude that the next 18 months could be challenging for investors.

**Figure 24 – QE5 balance sheet and asset returns (%)**



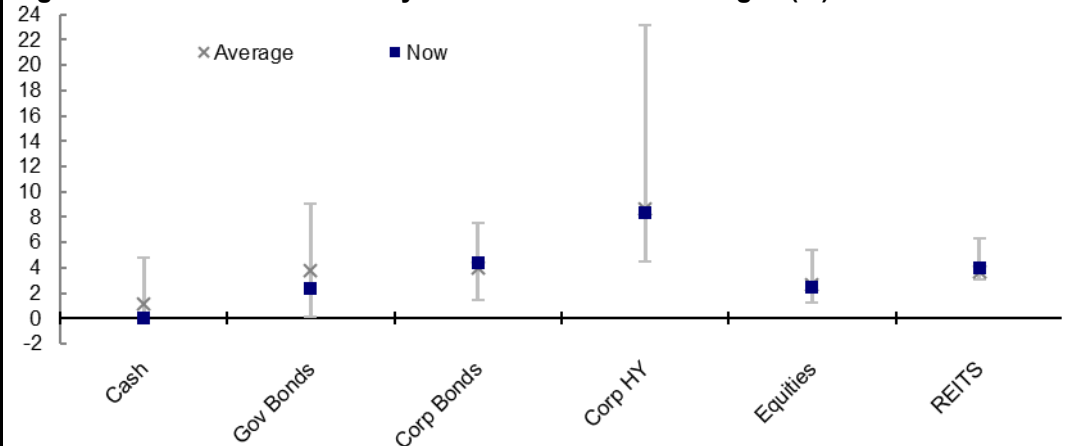
Notes: QE5 BS is the aggregate balance sheet of Fed, ECB, BOE, BOJ and SNB in USD. Forecast considers asset purchase plans of the central banks but ignores other sources of growth. The Fed has announced an asset holding reduction plan of \$47.5bn per month until September 2022, when it will increase to \$95bn per month (we assume it stays at that rate to end-2023). The ECB has announced it will end purchases on 1 July 2022 and we assume no changes thereafter. We also assume stability in BOJ and SNB balance sheets over the forecast horizon. The BOE is reducing its asset holdings and we assume a reduction of £5bn 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 May 2022. **Past performance is no guarantee of future results.** Source: BOE, 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, especially bonds**

The good news is that the rise in yields shown in **Figure 5** (and the accompanying negative performance) gives a better starting point for most assets. **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 approaching 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 5.9% (see the regional detail in **Appendix 1**).

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



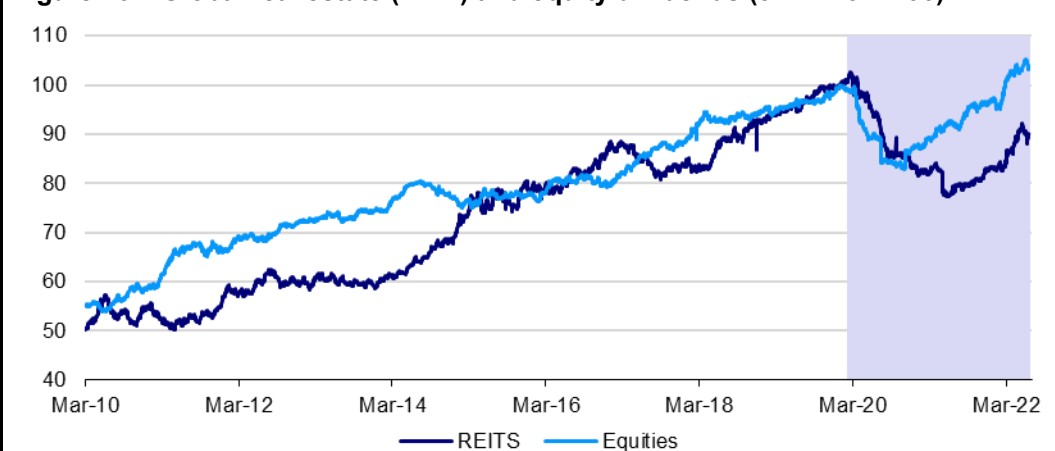
Start dates are cash 1/1/01; govt bonds 31/12/85; corp bonds 31/12/96; corp HY 31/12/97; equities 1/1/73; REITs 18/2/05. See appendices for definitions, methodology and disclaimers. As of 13 June 2022.  
Source: Refinitiv Datastream and Invesco

But the growth that supports economically sensitive assets may be waning

The returns on cyclical assets such as equities and real estate are not just about yield, but also about growth. We have already mentioned that we are now less hopeful about equity dividend growth and **Figure 26** shows that dividends have recovered to the pre-pandemic trend, confirming that the best may be behind us.

Real estate (REIT) dividends have not enjoyed the same recovery. First, the low point was at 77% of the end-2019 level (83% in the case of equities) and the limited rebound leaves them still 10% below that end-2019 level. We think this reflects collateral damage done to some groups of real estate by the pandemic but we doubt the recent downturn in REIT dividends is the start of a trend (as rents may offer inflation protection, in our view).

**Figure 26 – Global real estate (REIT) and equity dividends (31/12/19 = 100)**

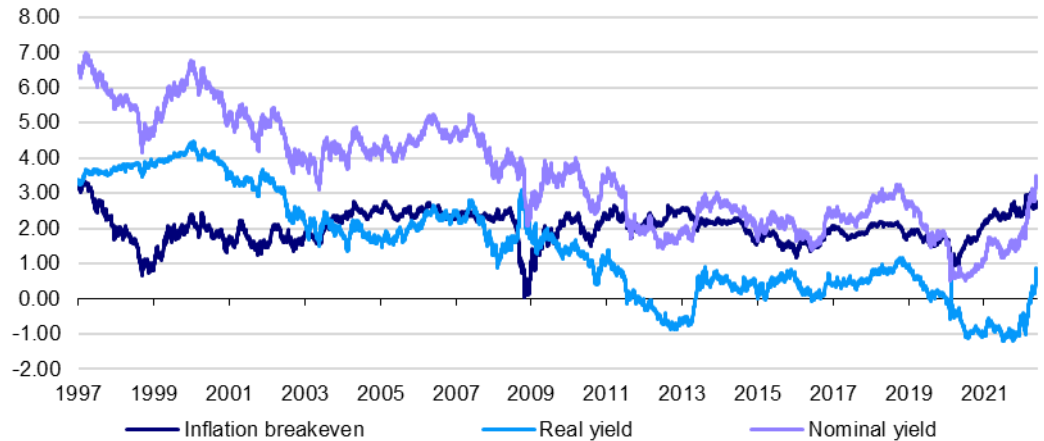


Note: daily data from 2 March 2010 to 15 June 2022. For both REITs and Equities, the level of dividends is calculated from the reported dividend yield and index levels (and indexed to 100 on 31 December 2019). REIT dividends are based on FTSE EPRA/NAREIT Global Index. Equity dividends are based on the Datastream World Index. Shaded area shows the Covid-19 pandemic period (from 1 February 2020 to today).  
Source: FTSE EPRA/NAREIT, Refinitiv Datastream and Invesco

Have government bond yields risen enough?

However, the big question is whether government bond yields have now risen far enough to make the asset class an interesting proposition (we have recently held the minimum that we allow ourselves within our Model Asset Allocation). The rise in yields has been spectacular, with US 10-year treasury yields rising by almost two percentage points so far this year and almost three percentage points since the March 2020 low (see **Figure 27**). The current 10-year yield of around 3.40% is the highest since April 2011.

**Figure 27 – US 10-year treasury yield decomposed (%)**



Notes: **Past performance is no guarantee of future results.** Daily data from 29 January 1997 to 15 June 2022. Source: Refinitiv Datastream and Invesco

Government yields may need to go higher in time but recession could pull them down in the short term

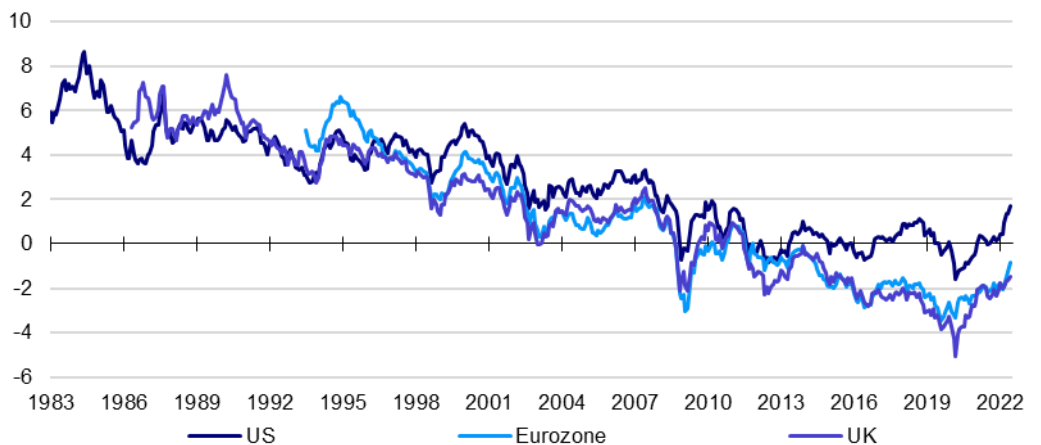
Though the climb in yields was initially due to rising inflation projections (see “Inflation breakeven” in **Figure 27**), the recent ascent has been the result of rising real yields which are now approaching the highest level seen since 2011. Admittedly, neither the real nor nominal yield is yet at pre-Global Financial Crisis (GFC) levels but it may take some time to get there, especially if the global economy tilts into recession (which we believe would pull government bond yields lower).

Yield gaps suggest government bonds are more attractive relative to equities than at anytime in the last decade

So, if government bond yields are now looking more attractive in absolute terms, what about in relation to other assets? The usual comparison is to equities and **Figure 28** shows that the yield gap between government bonds and local equity dividend yields has improved on both sides of the Atlantic. In the US, the gap is wider than at any time since April 2010, though in Europe the gap remains negative.

We believe the dramatic increase in government yields and widening of yield gaps has shifted the balance in favour of government bonds, especially if recession occurs.

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



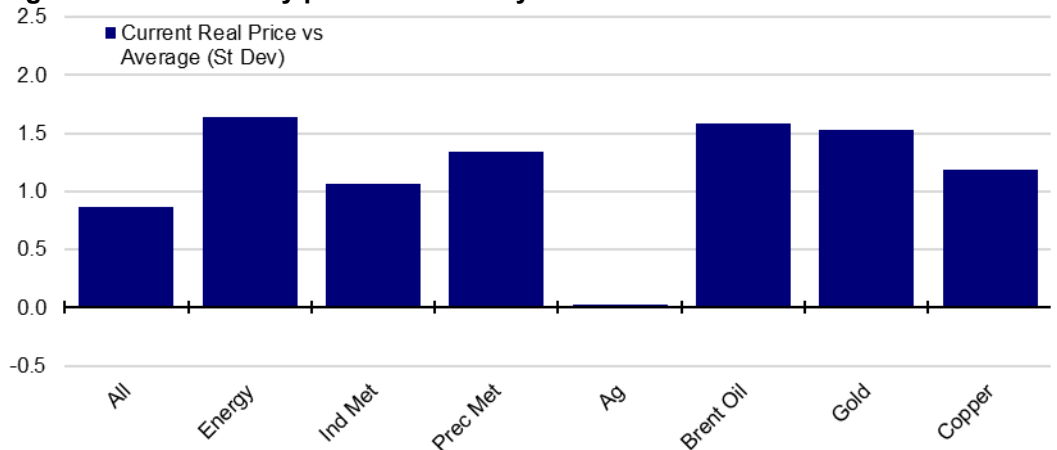
Note: **past performance is no guarantee of future results.** Monthly data from January 1983 to June 2022 (as of 15 June 2022). Yield gap is 10-year government bond yield minus equity dividend yield (based on Datastream equity indices). Source: Refinitiv Datastream and Invesco

Real commodity prices are well above historical norms

### Commodities and currencies

We already thought that industrial commodities and gold were looking expensive and Russia’s invasion of Ukraine initially gave them an added boost. However, recent commodity price strength has been concentrated in the energy and agriculture segments (see **Appendix 2**). All commodity groups now look more expensive than usual when measured in real terms (see **Figure 29**), though the agriculture sub-group is relatively close to its own historical norm. Industrial commodities and agriculture could be further supported if Russia-Ukraine inspired shortages continue but global economic slowdown is likely to have less effect on the latter. Our 12-month projections show that we expect major commodity prices to weaken (see **Figures 35 and 36**).

**Figure 29 – Commodity prices deflated by US CPI versus historical norms**

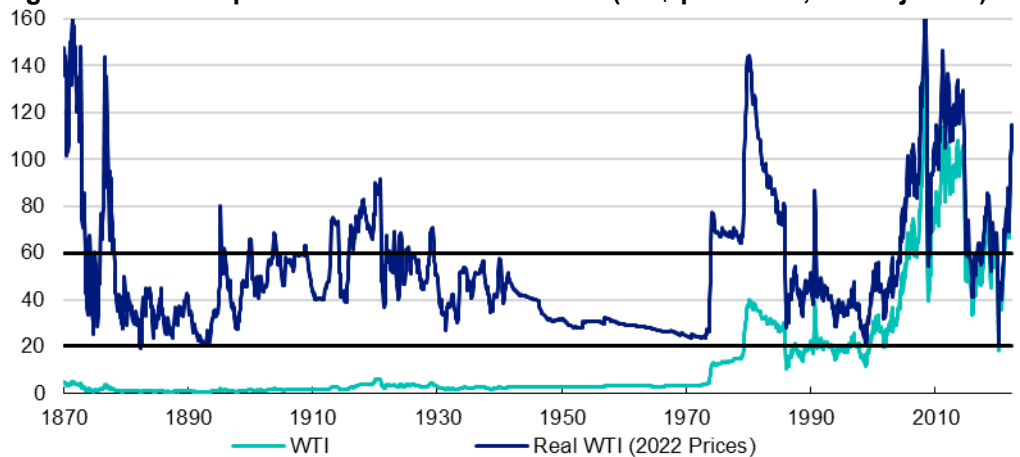


Abbreviations: “Ind Met” is industrial metals, “Prec Met” is precious metals and “Ag” is agriculture. Historical ranges start on: All and Ag 31/12/69; Energy 31/12/82; Ind Met 3/1/77; Prec Met 2/1/73; Brent 1/6/87; gold 1/1/74; copper 1/1/74. As of 13 June 2022. See appendices for definitions, methodology and disclaimers. Source: GSCI, Refinitiv Datastream, Invesco

Current oil prices are unusual and have never endured for long

**Figure 30** shows how rarely oil has scaled recent peaks over the last 150 years (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 \$140 (in today’s prices), because both demand and supply adjust to those higher prices. We presume the same will prove the case today, though if that thesis is put to the test, the demand-side reaction may require global recession. We are assuming such prices will not be seen but cannot exclude the possibility (if Russia cuts supply to Europe).

**Figure 30 – US oil price in real terms since 1870 (US\$ per barrel, CPI adjusted)**



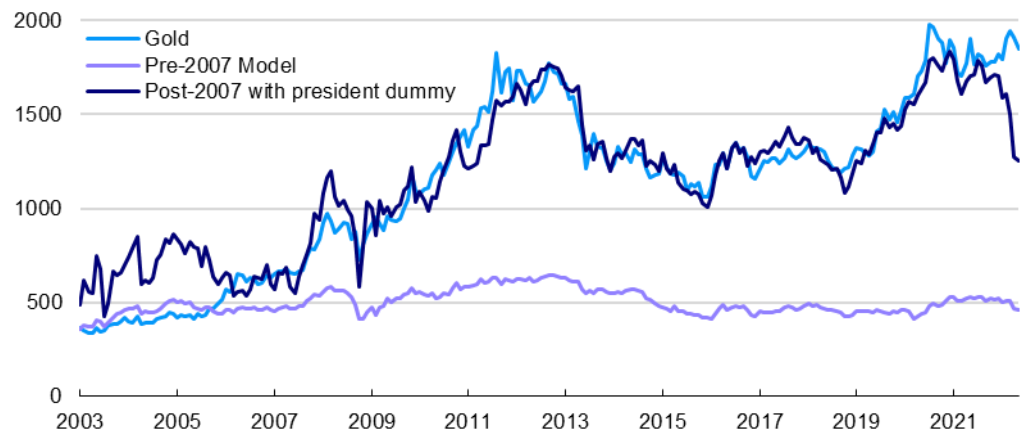
Note: monthly data from January 1870 to May 2022 (as of 31 May 2022). WTI is West Texas Intermediate. Real WTI is calculated by dividing the price of WTI by an index of US consumer prices. **Past performance is no guarantee of future results.** Source: Global Financial Data, Refinitiv Datastream and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



Gold could benefit from economic slowdown but it already seems elevated

We noted in early February that gold was disconnecting from our econometric model (see [Why is gold misbehaving?](#)). According to our model, gold tends to fall when bond yields and/or the dollar rise. Those conditions have been met this year but gold hasn't fallen as expected (see **Figure 31**). We suspected that was partly due to a Russia/Ukraine risk premium but it may also reflect a change in the motivation for buying gold (from concerns about deflation to worries about inflation). 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 31**.

**Figure 31 – Gold versus model fair value (US\$ per ounce)**

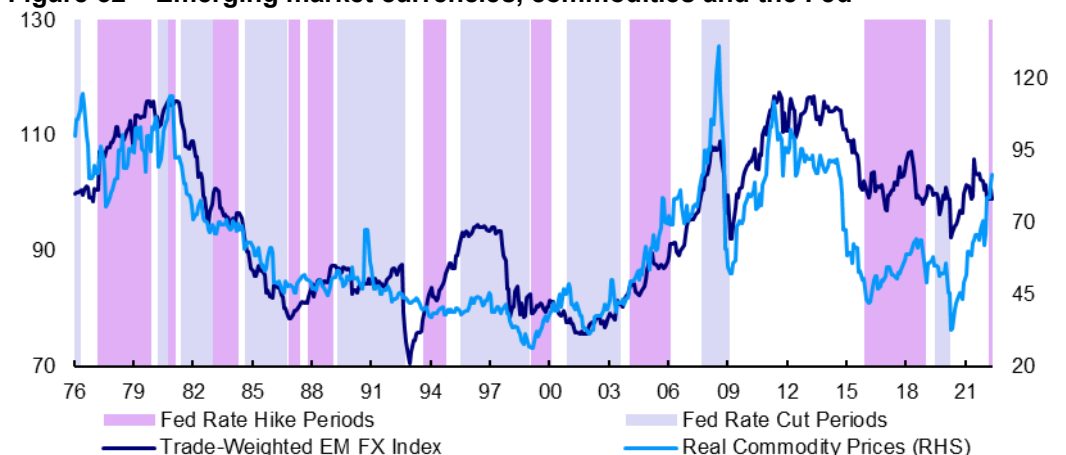


Notes: monthly data from January 2003 to May 2022 (as of 31 May 2022). Gold is modelled as a function of real 10-year US Treasury yield, 10-year US inflation breakeven and trade-weighted USD. "Pre-2007 Model" is based on data from 31 January 1997 to 31 December 2006. "Post-2007 Model" is based on data 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. Past performance is no guarantee of future results.**  
Source: Refinitiv Datastream and Invesco

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

**Figure 32** suggests a good historical relationship between our EM FX index and commodity prices, though there has been a notable disconnect in recent months. We believe the path of commodity prices is more important than the Fed in determining what happens to EM currencies and suspect those currencies are yet to fully reflect the benefit of higher raw material prices (to commodity producers).

**Figure 32 – Emerging market currencies, commodities and the Fed**

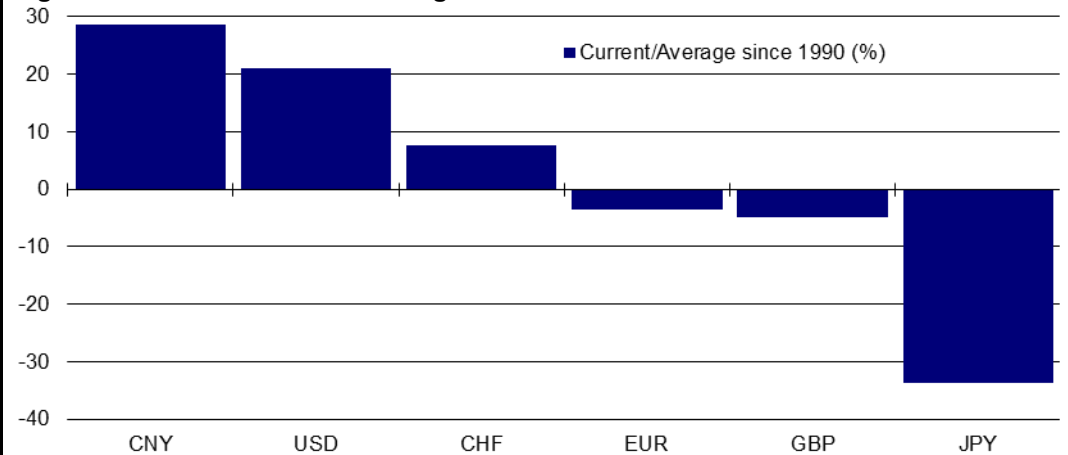


Note: monthly data from January 1976 to May 2022. Real trade-weighted EM FX index is a trade weighted average of national currencies versus US dollar (trade weights are based on total trade flows for each country). There are 18 currencies in the EM basket – those of China, Brazil, South Korea, Mexico, 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 May 2022. **Past performance is no guarantee of future returns.** Source: IMF, OECD, Oxford Economics, S&P GSCI, Bloomberg L.P., Refinitiv Datastream, Invesco.

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

When it comes to major currencies, the big valuation contrast remains that between CNY and JPY (see **Figure 33**). 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 has penalised it in the short term.

**Figure 33 – Real effective exchange rates\***



\*Currency indices measured against a trade-weighted basket of currencies and adjusted for inflation differentials. As of 30 April 2022. Source: OECD, Datastream and Invesco

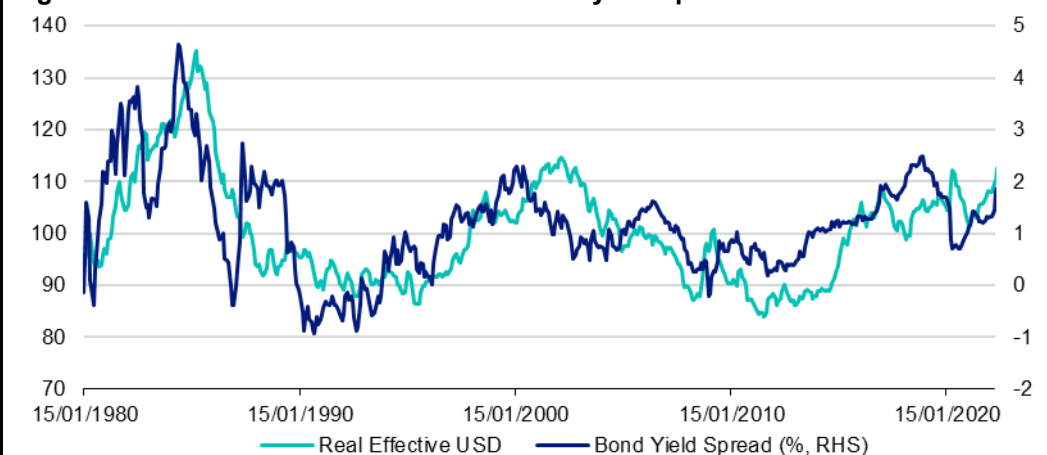
There are many reasons why the dollar could weaken over the long term...

As already mentioned when considering gold, the path of the US dollar has an impact on many other assets and it has been strengthening. However, it is not hard to find reasons why the dollar should in fact weaken: first, a chronic current account deficit has led to the US accumulating a large negative net international investment position (the US is increasingly indebted to the rest of the world); second, a more expansive fiscal response to the Covid crisis than in other countries worsened that current account deficit and, third, **Figure 33** suggests the dollar is above its normal value in real terms.

...but yield spreads have been providing support

Looking to shorter term drivers, **Figure 34** suggests movements in the real trade-weighted value of the dollar is correlated to the spread between US bond yields and those of other countries. As the Fed has turned from running a very loose ship to tightening rapidly, the spread between US and other yields has widened, thus supporting the dollar. However, we are sceptical that the dollar has much further upside and expect it to weaken slightly over the next 12 months (see **Figure 35**).

**Figure 34 – Real effective US dollar and bond yield spread**



Note: monthly data from January 1980 to May 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 May 2022. **Past performance is no guarantee of future returns.** Source: OECD, Refinitiv Datastream and Invesco.

Recession risk is elevated

We assume less growth and less inflation

Long-term yields may have risen enough

Equity and REIT yields may rise slightly and dividends grow less

### Projections for the next year

With some central banks tightening aggressively when economies are slowing under the pressure of higher inflation, we believe the risk of recession cannot be ignored. At the same time, bond yields have risen dramatically, which has changed the investment landscape (when considering yields available on competing assets).

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 will remain above many central bank targets
- The Fed raises rates more than other central banks (the PBOC loosens)
- Long-term government bond yields peak and yield curves flatten
- Credit spreads widen and defaults rise
- USD weakens slightly as geopolitical risk premia decline; CNY weakens
- Equity dividend growth moderates and equity yields rise slightly
- Real estate (REIT) dividend growth moderates and yields are flat/slightly up
- Commodities struggle as global economy slows (except agricultural products)

The assumptions behind our projections are laid out in **Appendix 4**, while **Figure 35** shows how they translate into market targets. Perhaps the single most important forecast is the aggressiveness of Fed, which we presume will raise rates to 3.00% by the end of 2022 but will then be persuaded by a slowing economy and falling inflation to pause its tightening. Likewise, we expect that economic slowdown to allow 10-year treasury yields to stabilise, thus allowing a flattening of the yield curve. Yields in other developed economies are presumed to fall even more due to the risk of recession.

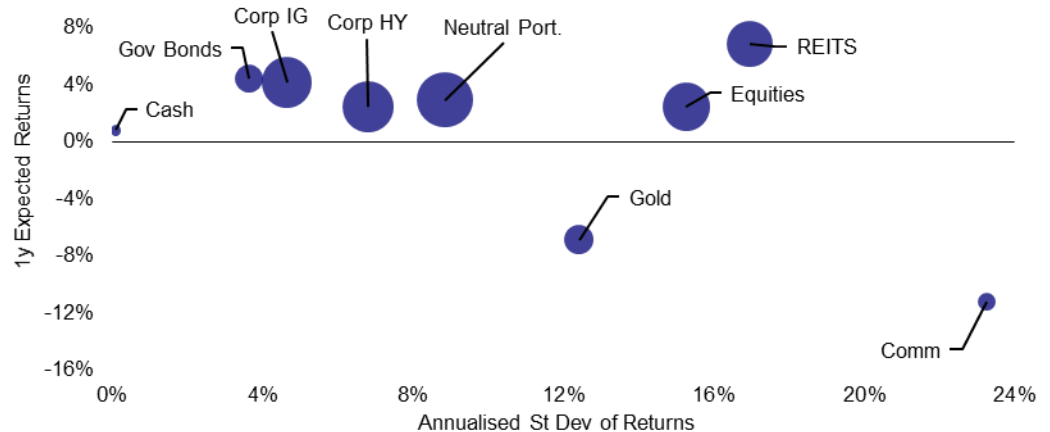
Yields on equities and real estate will face competing forces: we expect the threat of recession to push them to the upside but we think this will be balanced to some extent by falling bond yields. Overall, we expect a slight rise in equity and real estate yields in most regions. We also expect less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

**Figure 35 – Market forecasts**

		Current (13/06/22*)	Forecast 12-month
<b>Central Bank Rates</b>	US	1.75	3.25
	Eurozone	-0.50	1.00
	China	4.35	4.00
	Japan	-0.10	0.00
	UK	1.25	2.00
<b>10yr Bond Yields</b>	US	3.37	3.25
	Eurozone	1.62	1.00
	China	2.81	3.00
	Japan	0.25	0.10
	UK	2.50	1.75
<b>Exchange Rates/US\$</b>	EUR/USD	1.04	1.10
	USD/CNY	6.75	6.60
	USD/JPY	134.42	120.00
	GBP/USD	1.21	1.30
	USD/CHF	0.99	0.90
<b>Equity Indices</b>	S&P 500	3750	3700
	Euro Stoxx 50	3503	3400
	FTSE A50	13799	13500
	Nikkei 225	26987	27250
	FTSE 100	7206	7250
<b>Commodities (US\$)</b>	Brent/barrel	128	100
	Gold/ounce	1826	1700
	Copper/tonne	9286	8000

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 36 – 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 13 June 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 36** suggest REITs will be the best performing global asset class over the next 12 months, followed closely by government debt, which now looks more attractive given the rise in yields and the risk of recession (note that both assets are among those favoured by the GMS team – see **Figure 20**). IG projected returns are similar but come with higher volatility than government bonds and more correlation with other assets. With the exception of cash and REITs, our projections broadly suggest that over the next 12 months, higher risk will come with lower return.

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 37** 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).

Government bond and REIT allocations boosted at the expense of cash, IG, HY and equities

Within our Model Asset Allocation we follow the suggestions of the optimiser in direction but not necessarily magnitude. We switch to an Overweight stance in government bonds, funded by reducing cash (still Overweight), equities (to Underweight), HY (to zero) and IG (to less Overweight). Elsewhere, we have boosted real estate to an Overweight 10% (from Neutral) and remain absent commodities.

**Figure 37 – Optimised allocations for global assets (using local currency returns)**

	Neutral Portfolio	Policy Range	Projected Returns	Optimisations		Model Asset Allocation*
				Sharpe Ratio	Max Return	
<b>Cash &amp; Gold</b>	5%	0-10%	-3.1%	10%	0%	↓ 5%
Cash	2.5%	0-10%	0.8%	10%	0%	↓ 5%
Gold	2.5%	0-10%	-6.9%	0%	0%	0%
<b>Govt Bonds</b>	25%	10-40%	4.4%	40%	40%	↑ 30%
<b>Corporate IG</b>	10%	0-20%	4.1%	20%	19%	↓ 15%
<b>Corporate HY</b>	5%	0-10%	2.5%	3%	0%	↓ 0%
<b>Equities</b>	45%	25-65%	2.4%	25%	25%	↓ 40%
<b>Real Estate</b>	8%	0-16%	6.9%	2%	16%	↑ 10%
<b>Commodities</b>	2%	0-4%	-11.2%	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



We go Overweight government bonds for the first time in six years

We favour EM government bonds but also add to developed market allocations

We reduce equities to slightly Underweight, with a preference for EM (especially China)

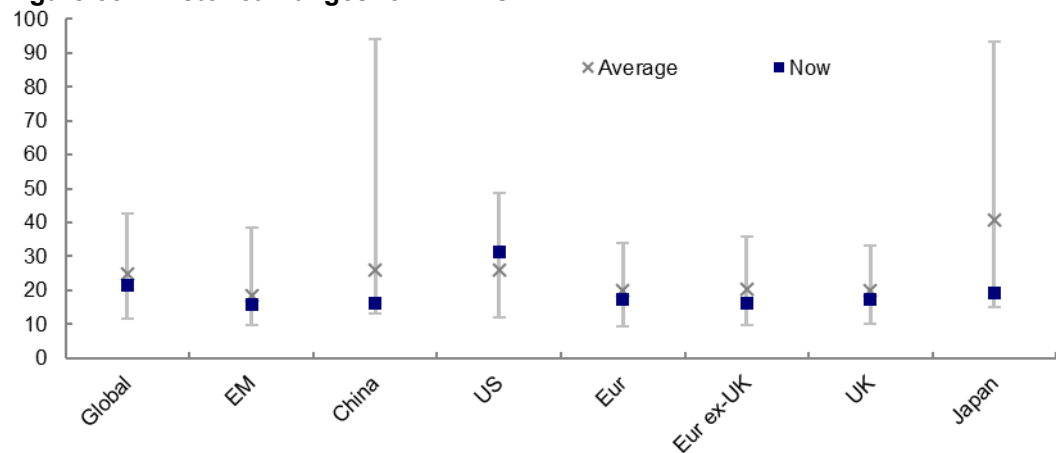
**Model Asset Allocation: hard to resist higher government bond yields**

After a sharp rise in government bond yields, and with concern about potential recession, we are boosting government bonds to Overweight and reducing equities to Underweight within our Model Asset Allocation (see **Figure 37**). This is balanced by adding to real estate (from Neutral to Overweight) and by reducing IG (still Overweight) and HY (to zero) and cash (from Maximum to Overweight). The Model Asset Allocation now has a more conservative balance. From a regional perspective we have added to UK and US allocations, and remain Overweight in EM and the UK (see **Figure 3** for regional detail).

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 relative to those on equities, say. Believing that recession risks are growing, we move **government bonds** to an Overweight stance (30% versus Neutral 25%). This is the first time we have been Overweight the asset class since September 2016 (and that was only briefly). We remain Overweight EM government bonds (though eliminating the China allocation in the belief that the fall in yields may have run its course) and raise allocations to the US, Eurozone, UK (all now Overweight) and Japan (Underweight).

Equity prices have fallen and dividend yields are up but the economic and profit outlook becomes less encouraging by the day. We are reducing the **equity** allocation to slightly Underweight (40% from the previous Overweight 50%). We were already at the maximum allocation to EM equities and we believe they are good value (see **Figure 38**). Within the EM allocation, we are going further Overweight China (which has recently been outperforming), partly due to valuations and also in the belief that economic momentum will now improve on policy support. We have reduced the allocation to Europe ex-UK (to Underweight) and to the UK and Japan (but both remain Overweight).

**Figure 38 – Historical ranges for 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 and EM from 3 January 2005), using Datastream indices. As of 13 June 2022. Source: Refinitiv Datastream and Invesco

Real estate is boosted to Overweight, while HY, IG and cash are reduced

Among other cyclical assets, we raise **real estate** (from the Neutral 8% to an Overweight 10%), with particular enthusiasm for EM (REIT yield of 5.9%). At the same time we have reduced **HY** to zero (from an Underweight 2%) and **IG** (from the Maximum 20% to a still Overweight 15%, with reductions in the US, Japan and China). We presume that credit spreads will continue to widen if recession occurs and we wanted to boost government bonds which are typically less volatile. We have also reduced **cash** to a still Overweight 5% (from Maximum 10%), as we believe government bonds are now more compelling.

After missing the recent rise in **commodity** prices, we do not wish to chase that performance and remain zero allocated (including **gold**, which we find expensive).

UK and EM favoured

Regionally, we favour EM and the UK, both of which have assets that are attractively valued (in our opinion) and stand to benefit from the recent strength of commodity prices.

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### A word about the war in Ukraine

We assume a prolonged war of attrition

We covered the war in Ukraine in some detail in the previous [Big Picture](#) document (published in March 2022). Unfortunately, the war appears no closer to resolution and our central scenario remains one of a prolonged war of attrition. This is what is assumed in the forecasts outlined above. In essence, this scenario imagines that commodity prices remain elevated (though not at current levels), that inflation remains higher than we have been used to (if falling from here) and that global growth continues to fade, with a threat of recession.

But a rapid resolution would be welcomed by most financial markets

Of course, we cannot know what will happen and given the uncertainties we imagine two alternative scenarios. The first assumes a rapid resolution to the conflict, which we think would be welcomed by most financial markets, with the exception of commodities. The decline in commodity prices that we imagine for this scenario would likely hasten the decline of inflation, which we think would take the pressure off central banks to tighten and relieve the pressure on household and business incomes. We would be inclined to favour cyclical assets (except for those commodities that are in limited supply due to the war – energy and industrial metals, say). We suppose that agricultural commodities would also suffer a price decline, as supplies increase once again.

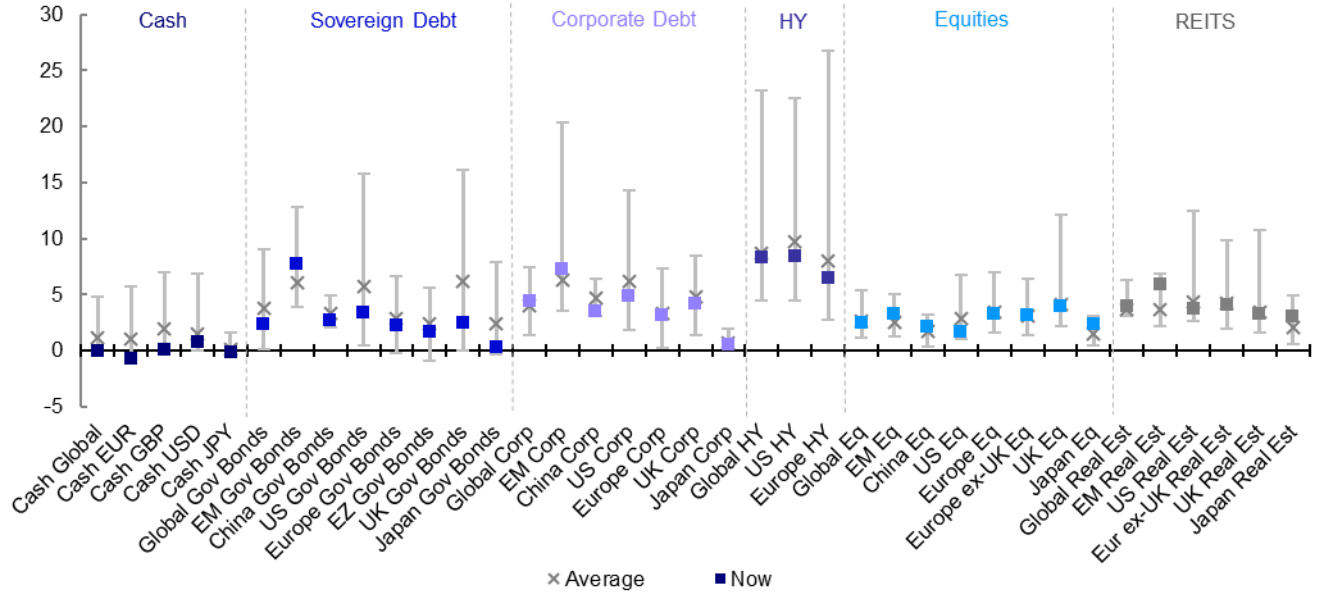
On the other hand a cut in energy supplies to Europe could bring stagflation

The other tail-risk is a darker outcome, whereby Russia abruptly cuts energy supplies to Europe. Given that Russia supplied more than 20% of Europe's energy prior to its invasion of Ukraine, we believe this would lead to deep recession in Europe and higher inflation (due to reduced supply from Europe's production facilities). Hence, we think this scenario would leave Europe in stagflation, with the risk of that spreading to the rest of the world. We would favour defensive assets but with inflation on the rise, it would be difficult to identify them. We suppose that gold would be one candidate, along with inflation protected government bonds. We would likely further reduce the equity allocation under such an outcome, though fixed income assets could also suffer.

Appendices

Appendix 1: Global valuations vs history

Regional yields within historical ranges (%)



Notes: As of 13 June 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 13/06/2022	Index	Current Level/Ry	Total Return (USD, %)				Total Return (Local Currency, %)			
			3m	YTD	12m	5y*	3m	YTD	12m	5y*
<b>Equities</b>										
World	MSCI	620	-5.8	-16.9	-12.0	8.2	-4.1	-14.7	-8.1	8.9
Emerging Markets	MSCI	1055	-2.1	-13.5	-21.6	3.6	-0.2	-10.3	-16.5	5.8
China	MSCI	73	8.2	-12.6	-31.9	2.1	9.4	-11.3	-30.7	2.2
US	MSCI	3709	-7.3	-18.7	-8.8	11.7	-7.3	-18.7	-8.8	11.7
Europe	MSCI	1697	-3.8	-17.0	-16.0	3.5	0.9	-9.8	-3.9	4.6
Europe ex-UK	MSCI	2053	-4.5	-20.2	-19.4	3.7	-0.2	-13.6	-7.9	5.0
UK	MSCI	1086	-1.6	-5.7	-4.0	2.9	4.4	3.5	9.9	3.5
Japan	MSCI	3210	-4.2	-15.7	-16.3	3.0	9.9	-1.7	2.3	7.2
<b>Government Bonds</b>										
World	BofA-ML	2.21	-10.5	-14.9	-17.6	-1.5	-6.3	-9.5	-9.5	-0.2
Emerging Markets (USD)	BBloom	7.41	-9.9	-23.0	-24.4	-1.6	-9.9	-23.0	-24.4	-1.6
China	BofA-ML	2.65	-4.4	-3.1	0.8	5.0	1.2	1.7	5.6	4.6
US (10y)	Datastream	3.16	-9.6	-13.6	-12.7	0.7	-9.6	-13.6	-12.7	0.7
Europe	BofA-ML	2.00	-13.7	-19.9	-25.3	-2.2	-10.1	-13.5	-14.1	-1.0
Europe ex-UK (EMU, 10y)	Datastream	1.50	-14.3	-20.5	-25.9	-2.7	-10.8	-14.2	-14.8	-1.4
UK (10y)	Datastream	2.43	-13.0	-19.7	-24.0	-1.7	-7.8	-11.9	-13.1	-1.1
Japan (10y)	Datastream	0.25	-13.4	-15.5	-19.6	-3.9	-0.6	-1.6	-1.7	0.0
<b>IG Corporate Bonds</b>										
Global	BofA-ML	4.13	-7.5	-14.7	-16.1	0.5	-6.2	-12.5	-12.3	0.9
Emerging Markets (USD)	BBloom	6.96	-4.7	-20.6	-24.6	1.1	-4.7	-20.6	-24.6	1.1
China	BofA-ML	3.47	-4.5	-3.2	-0.1	4.7	1.1	1.6	4.6	4.4
US	BofA-ML	4.63	-6.3	-13.7	-13.0	1.5	-6.3	-13.7	-13.0	1.5
Europe	BofA-ML	2.87	-10.2	-17.7	-23.3	-2.1	-6.5	-11.1	-11.8	-0.8
UK	BofA-ML	4.05	-11.9	-20.9	-24.3	-0.6	-6.5	-13.2	-13.4	0.1
Japan	BofA-ML	0.54	-13.1	-15.0	-18.8	-3.6	-0.3	-0.9	-0.7	0.3
<b>HY Corporate Bonds</b>										
Global	BofA-ML	7.86	-5.5	-12.5	-13.7	1.8	-4.6	-10.9	-10.9	2.1
US	BofA-ML	7.85	-5.2	-10.3	-8.3	2.8	-5.2	-10.3	-8.3	2.8
Europe	BofA-ML	6.11	-8.2	-16.8	-21.7	-0.3	-4.4	-10.1	-9.9	1.0
<b>Cash (Overnight LIBOR)</b>										
US		0.82	0.1	0.1	0.2	1.1	0.1	0.1	0.2	1.1
Euro Area		-0.65	-4.9	-5.9	-12.6	-1.3	-0.2	-0.3	-0.6	-0.5
UK		0.18	-5.8	-6.7	-11.1	0.0	0.0	0.1	0.1	0.3
Japan		-0.09	-9.1	-9.5	-13.7	-2.7	0.0	0.0	-0.1	-0.1
<b>Real Estate (REITs)</b>										
Global	FTSE	1717	-10.7	-17.7	-14.6	2.6	-7.0	-11.1	-1.7	3.9
Emerging Markets	FTSE	1436	-6.9	-10.2	-25.9	-2.7	-3.1	-3.0	-14.7	-1.4
US	FTSE	3092	-12.1	-19.8	-9.2	4.7	-12.1	-19.8	-9.2	4.7
Europe ex-UK	FTSE	2651	-19.4	-28.1	-32.3	-0.9	-16.1	-22.4	-22.1	0.4
UK	FTSE	942	-12.2	-21.2	-14.1	1.7	-6.9	-13.6	-1.7	2.4
Japan	FTSE	2328	-2.6	-9.7	-19.2	0.8	11.8	5.3	-1.2	4.9
<b>Commodities</b>										
All	GSCI	4252	12.5	53.2	64.9	14.6	-	-	-	-
Energy	GSCI	798	24.3	85.9	108.6	17.7	-	-	-	-
Industrial Metals	GSCI	1806	-18.2	-0.4	5.7	9.3	-	-	-	-
Precious Metals	GSCI	2113	-7.0	1.3	-3.5	6.6	-	-	-	-
Agricultural Goods	GSCI	642	2.7	28.6	31.5	9.3	-	-	-	-
<b>Currencies (vs USD)**</b>										
EUR		1.05	-3.6	-7.5	-13.1	-1.3	-	-	-	-
JPY		134.44	-12.7	-14.4	-18.4	-3.9	-	-	-	-
GBP		1.23	-5.7	-8.9	-12.6	-0.6	-	-	-	-
CHF		1.01	-5.3	-7.6	-9.0	-0.4	-	-	-	-
CNY		6.71	-5.5	-5.3	-4.6	0.3	-	-	-	-

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	1.5	1.5	1.5	1.01	
	US Treasury Intermediate	BBG BARC US Treasury Intermediate	2.5	2.6	4.6	0.57	
	US Treasury Long	BBG BARC US Treasury Long	1.7	2.3	11.8	0.20	
	US TIPS	BBG BARC US TIPS	1.6	1.8	5.4	0.33	
	US Bank Loans	CSFB Leverage Loan Index	5.1	5.4	8.4	0.65	
	US Aggregate	BBG BARC US Aggregate	2.8	3.0	6.0	0.50	
	US Inv Grd Corps	BBG BARC US Investment Grade	2.9	3.2	7.7	0.42	
	US MBS	BBG BARC US MBS	3.1	3.4	6.6	0.51	
	US Preferred Stocks	BOA ML Fixed Rate Pref Securities	3.5	4.2	12.4	0.34	
	US High-Yield Corps	BBG BARC US High Yield	4.5	5.0	10.1	0.50	
	US Muni	BOA ML US Muni	2.7	3.0	7.2	0.41	
	US Muni (Taxable)	ICE BOA US Taxable Muni Securities Plus	2.8	3.1	7.9	0.39	
	Global Aggregate	BBG BARC Global Aggregate	2.9	3.1	6.9	0.45	
	Global Aggregate-Ex US	BBG BARC Global Aggregate- Ex US	2.8	3.3	10.2	0.32	
	Global Treasury	BBG BARC Global Treasuries	2.7	3.0	8.4	0.36	
	Global Sovereign	BBG BARC Global Sovereign	2.3	2.6	7.6	0.35	
	Global Corporate	BBG BARC Global Corporate	3.1	3.4	7.8	0.44	
	Global Inv Grd	BBG BARC Global Corporate Inv Grd	3.1	3.4	8.0	0.43	
	Eurozone Corporate	BBG BARC Euro Aggregate Credit - Corporate	3.0	3.9	13.3	0.29	
	Eurozone Treasury	BBG BARC Euro Aggregate Government - Treasury	2.7	3.5	12.4	0.28	
	Asian Dollar Inv Grd	BOA Merrill Lynch ACIG	3.5	3.9	8.4	0.46	
	Asian Dollar High Yield	BOA Merrill Lynch ACHY	9.8	11.4	19.1	0.60	
	EM Aggregate	BBG BARC EM Aggregate	4.4	5.2	13.2	0.40	
	EM Agg IG	BBG BARC EM USD Agg IG	2.9	3.3	8.8	0.38	
	China Policy Bk & Tsy	BBG BARC China PB Tsy TR	2.8	2.9	4.8	0.60	
	China RMB Credit	BBG BARC China Corporate	3.2	3.3	4.1	0.79	
	Equities	World Equity	MSCI ACWI	6.7	8.0	17.0	0.47
		World Ex-US Equity	MSCI ACWI Ex-US	7.0	8.6	18.9	0.45
US Broad		Russell 3000	6.6	8.0	17.5	0.46	
US Large Cap		S&P 500	6.5	7.8	16.7	0.46	
US Mid Cap		Russell Midcap	7.0	8.8	19.6	0.45	
US Small Cap		Russell 2000	8.3	10.6	23.0	0.46	
MSCI EAFE		MSCI EAFE	6.6	8.2	18.6	0.44	
MSCI Europe		MSCI Europe	7.1	8.7	18.7	0.46	
Eurozone		MSCI Euro X UK	6.9	8.7	19.7	0.44	
UK Large Cap		FTSE 100	7.6	9.4	20.1	0.47	
UK Small Cap		FTSE Small Cap UK	8.8	11.7	25.7	0.45	
Canada		S&P TSX	5.2	7.1	20.3	0.35	
Japan		MSCI JP	5.1	7.4	22.5	0.33	
Emerging Market		MSCI EM	8.3	11.0	25.1	0.44	
Asia Pacific Ex JP		MSCI APXJ	7.9	10.6	25.2	0.42	
China Large Cap		CSI 300	8.7	13.7	35.0	0.39	
Alternatives	US REITs	FTSE NAREIT Equity	6.6	8.2	18.8	0.44	
	Global REITs	FTSE EPRA/NAREIT Developed Index	6.3	7.9	18.5	0.43	
	Hedge Funds	HFRI HF Index	6.9	7.3	8.8	0.83	
	Commodities	S&P GSCI	6.2	8.8	23.9	0.37	
	Agriculture	S&P GSCI Agriculture	1.6	3.8	21.5	0.17	
	Energy	S&P GSCI Energy	8.9	14.5	37.2	0.39	
	Industrial Metals	S&P GSCI Industrial Metals	5.8	8.3	23.8	0.35	
Precious Metals	S&P GSCI Precious Metals	3.2	4.8	18.5	0.26		

Notes: Estimates as of 31 March 2022, as published in Long-Term Capital Market Assumptions (May 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 (%)	3.25	1.00	2.00	0.00	-	4.00
Sovereign spreads vs rates (bps)	20	70	50	10	-	-
Corporate IG spreads vs sovereign (bps)	200	120	200	40	-	-
Corporate HY spreads vs sovereign (bps)	600	650	-	-	-	-
Corporate HY default rates (%)	4.0	4.0	-	-	-	-
Corporate HY recovery rates (%)	40	40	-	-	-	-
Equities dividend growth (%)*	5.0	0.0	3.0	5.0	5.0	3.0
Equities dividend yield (%)*	1.8	3.3	4	2.5	3.3	2.2
Real estate (REITS) dividend growth (%)*	3.0	3.0	3.0	3.0	5.0	-
Real estate (REITS) dividend yield (%)*	3.8	4.2	3.3	3.0	6.0	-

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). 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 35**) 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, 36, 37**) 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, 38 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). 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 heterogeneous 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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